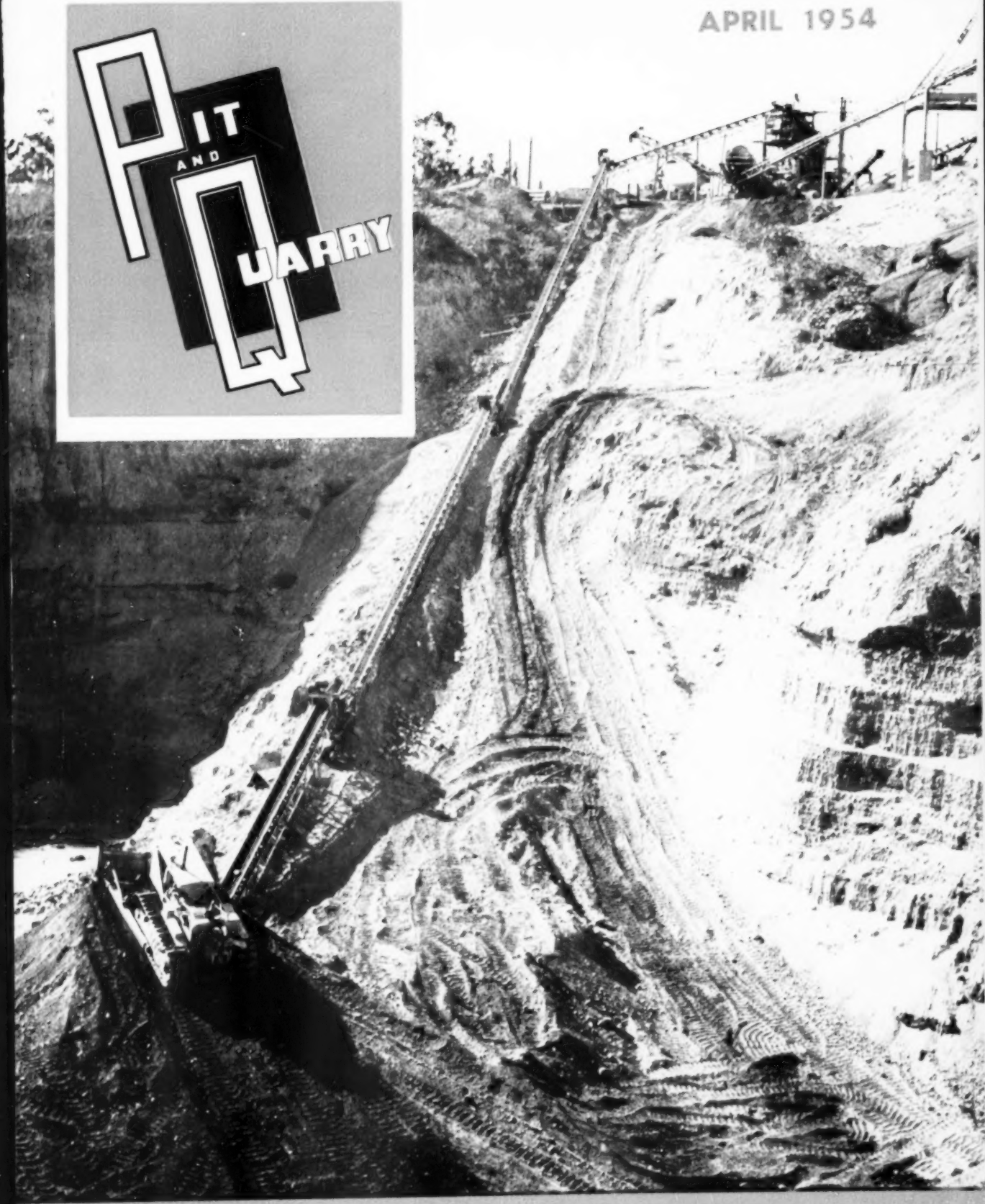
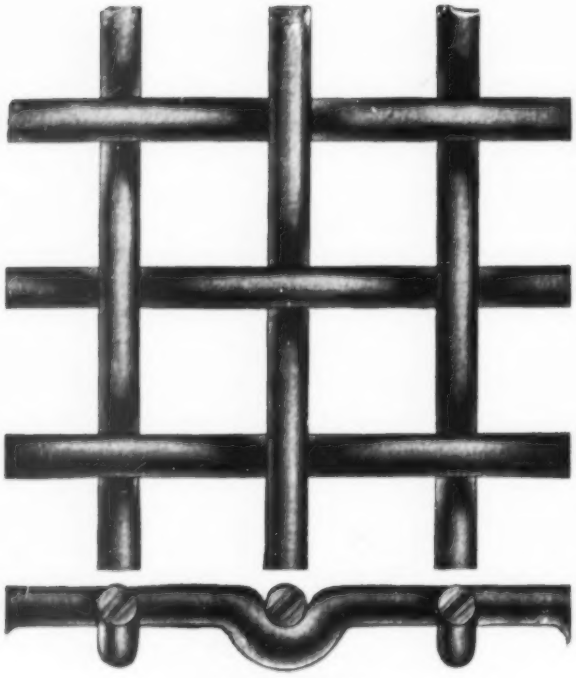
PIT AND QUARRY

APRIL 1954

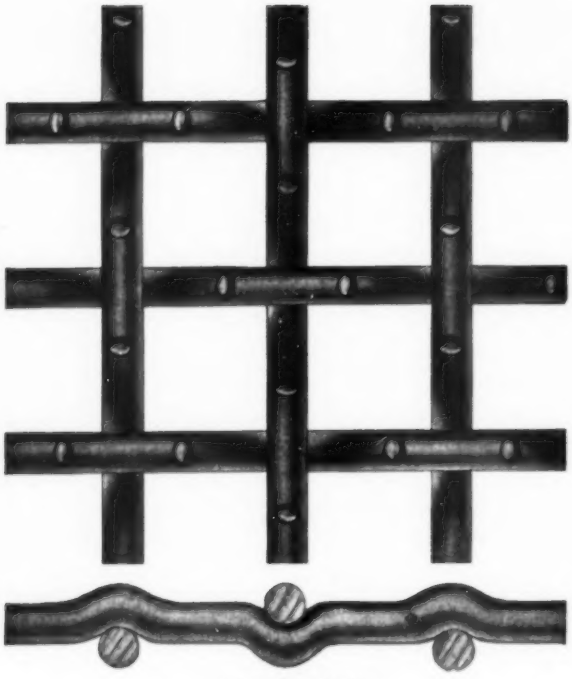


Sand and Gravel Deposit and Plant of R. J. Noble Company, Orange, Calif.

Table of Contents, Page 70



STA-SMOOTH



ARCH-CRIMP

SUPER-LOY VIBRATING-SCREEN SECTIONS

SUPER-HARD - - - SUPER-TOUGH - - - SUPER-STRONG

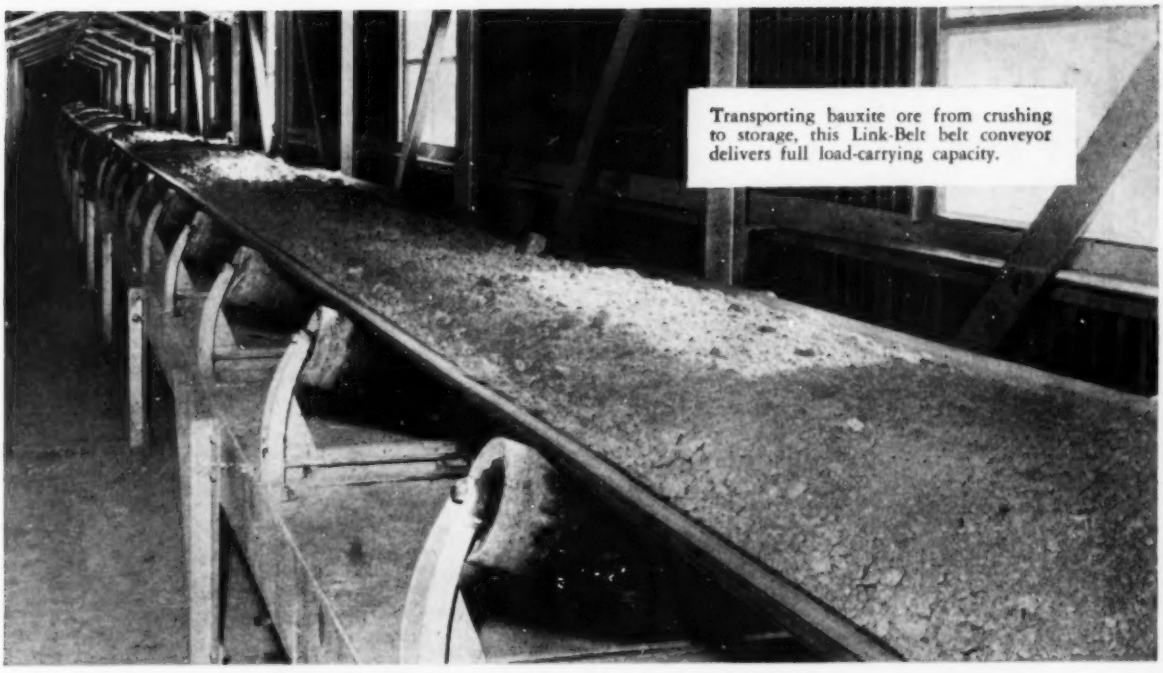
SUPER-LOY SCREENS are made from a high carbon steel specially alloyed to withstand abrasion longer — endure vibration better — resist fatigue to the utmost

ORDER LUDLOW-SAYLOR HOOK-STRIPS FOR ALL TENSIONED VIBRATING-SCREEN SECTIONS.

LUDLOW-SAYLOR WIRE CLOTH CO.

601 S. Newstead Ave. ST. LOUIS 10, MO.

STAR WIRE SCREEN & IRON WORKS, INC., 2515 SAN FERNANDO ROAD, LOS ANGELES 65, CALIF., SUBSIDIARY



Transporting bauxite ore from crushing to storage, this Link-Belt belt conveyor delivers full load-carrying capacity.

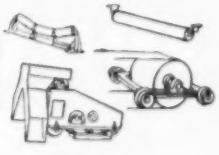
SURE ROAD TO LOWER HANDLING COSTS

... carry the load via Link-Belt belt conveyors

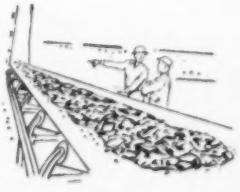
LINK-BELT offers you the "total engineering" so necessary for top efficiency

DESIGNED FOR OVERALL EFFICIENCY—Because of its unrivaled experience, Link-Belt can do a better job of gathering and analyzing all data. Proposals reflect this understanding of the most practical way to fit individual conveyors into your overall system requirements for best results.

BUILT FOR LONG-LIFE PERFORMANCE—Link-Belt manufactures all components and related feeders and conveyors. You are assured of the right equipment because of this breadth of line. And Link-Belt will supply the highest grade belts engineered to the specific job.



DELIVERS FULL RATED CAPACITY—Link-Belt follows through on every detail of the job, including electrical controls and even wiring and foundations. What's more, Link-Belt will furnish experienced erection superintendents, staffs and skilled crews at the customer's request.



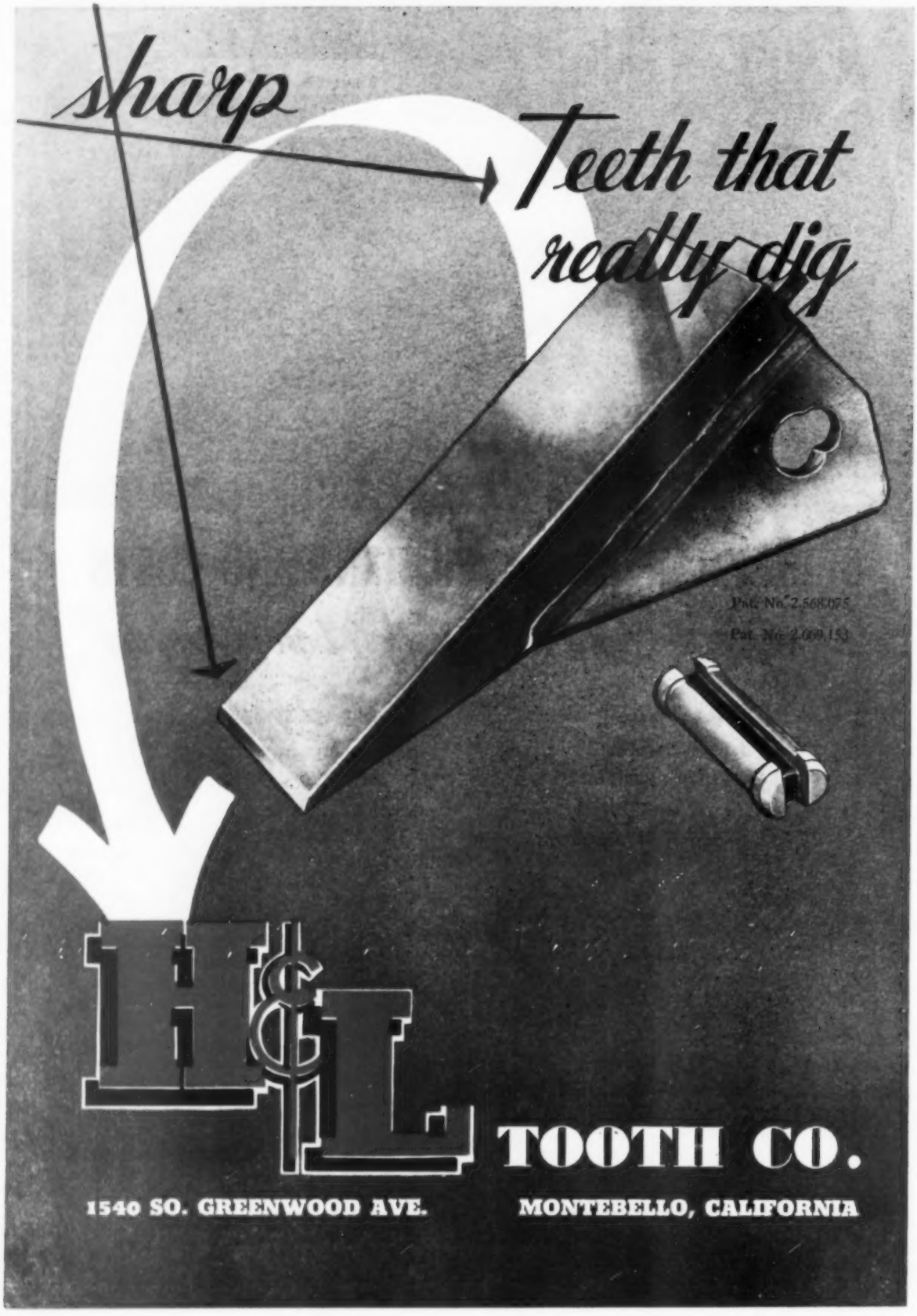
ASSURES SATISFACTORY PERFORMANCE—When you rely on Link-Belt as a single source for your complete system, we accept responsibility for placing it in full operating readiness. We will also supervise modernization of existing systems. For all the facts call your nearby Link-Belt sales representative.

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13.466 A

PIT AND QUARRY, April, 1954, Vol. 46, No. 10. Published monthly by the Pit and Quarry Publications, Inc., 431 S. Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy $0.50. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879.


sharp
Teeth that
really dig
Pat. No. 2,568,075
Pat. No. 2,609,153
H&L
TOOTH CO.
1540 SO. GREENWOOD AVE.
MONTEBELLO, CALIFORNIA

GOODYEAR QUALITY PAYS OFF AGAIN:

29-YEAR-OLD CONVEYOR

HAULS 2,500,000 TONS IN TROUBLE-FREE OPERATION

HEAVY dust. Frequent overloading. Highly abrasive materials. These are the conditions under which this Goodyear conveyor has carried—*is still carrying*—raw materials to the storage bins of a Midwestern cement plant for almost three decades. And in all these years there has been no down time for belt repairs or changes.

This rugged veteran has outlasted all other belts on the line. No direct comparison of service is possible, since all the others have been replaced. Moreover this belt, specified by the G.T.M.—Goodyear Technical man — in 1925, is good for years' more service.

Unmatched service, such as this, is what comes from consulting the G.T.M. on conveyor belts—or any other industrial rubber product. You can reach him through your Goodyear Distributor, or by writing Goodyear, Industrial Products Division, Akron 16, Ohio.

YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing or Rolls. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

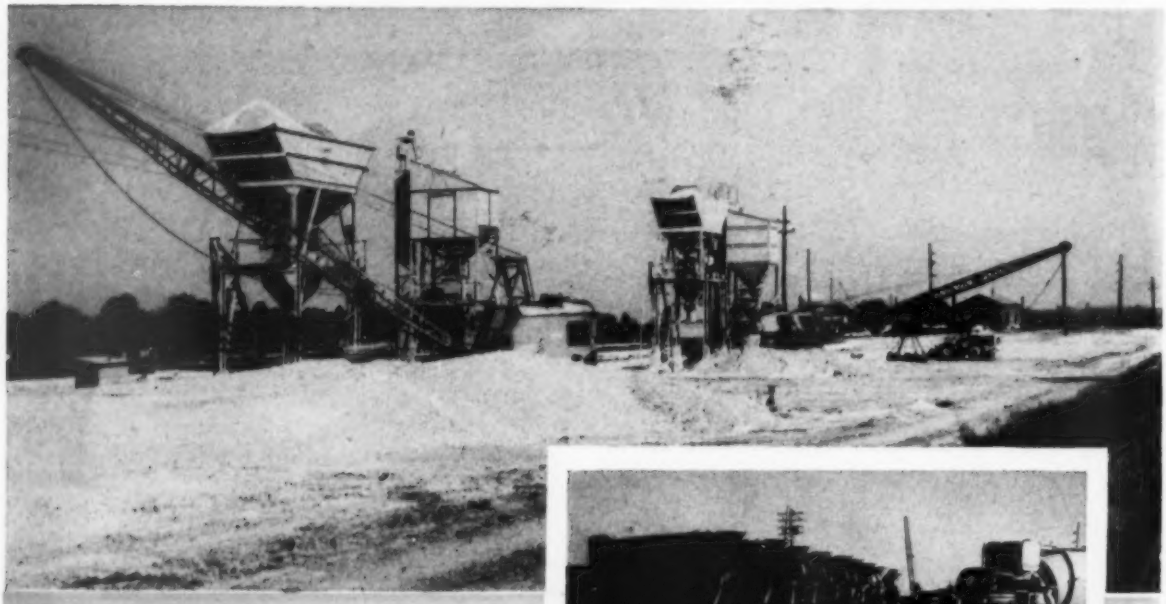
GOODYEAR

THE GREATEST NAME IN RUBBER

We think you'll like "THE GREATEST STORY EVER TOLD"—every Sunday—ABC Radio Network—THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

"More hauls–fewer overhauls with Gulf Quality Lubricants *and* Fuels"

says Albany, Georgia, Contracting Company



Some of the equipment of Grannis and Sloan, Thompson-Street and Wattinger Co., Inc.—satisfied users of Gulf quality products for a number of years. The company is currently at work on the new multi-million dollar warehouse being built at the Albany Marine Depot.

Take stock, as this progressive firm has, of the benefits possible through the use of Gulf quality products and fine service.

Here's what Gulf provides to help you get greater equipment availability, lower maintenance costs, and a smoother over-all operation: (1) Lubricants that give an extra margin of protection against wear; (2) fuels that burn evenly and completely, with fewer engine deposits; (3) expert petroleum engineering counsel.

Try Gulf quality products and fine friendly service now. Just call the nearest of more than 1400 Gulf warehouses located in 31 states from Maine to New Mexico, or write to Gulf Oil Corporation, Pittsburgh 30, Pa.

GULF OIL CORPORATION • GULF REFINING COMPANY

GULF

ROCK is This Company's Business!

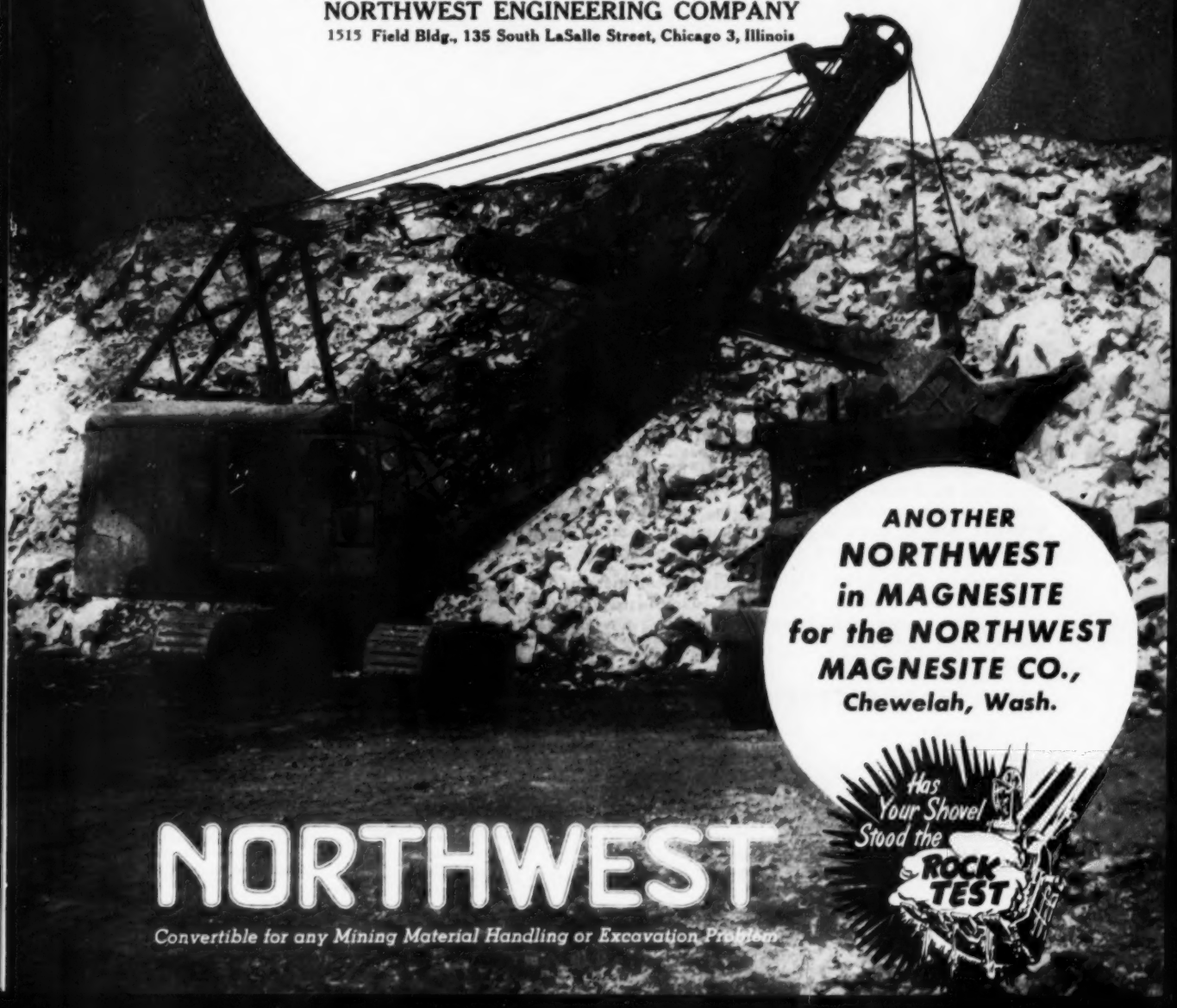
HERE'S as nice a bit of shovel busting material as anyone would like to stick a machine into! This is magnesite, a dense, compact and rare mineral used in furnace lining and as a source of magnesium.

The Northwest is owned by the Northwest Magnesite Company of Chewelah, Wash. *(no relation to us)*, and it's the second Northwest this company has purchased.

Northwests are meeting the "rock test" on jobs like this all over the country. Your Northwest is a *real* Rock Shovel and when you have a *real* Rock Shovel you don't have to worry about output in any kind of digging. Greater crowding force, smoothness of dipper control, easier operation and accuracy in spotting are just a few of the advantages that Northwests bring you. They are advantages that mean money on all hard rock work.

Northwest dependability and high output has made one out of every three Northwests sold a repeat order. There is no better testimonial!

NORTHWEST ENGINEERING COMPANY
1515 Field Bldg., 135 South LaSalle Street, Chicago 3, Illinois



ANOTHER NORTHWEST in MAGNESITE for the NORTHWEST MAGNESITE CO., Chewelah, Wash.

Has Your Shovel Stood the ROCK TEST

NORTHWEST

Convertible for any Mining Material Handling or Excavation Problem

Cedarapids

Built by IOWA

UNITIZED PLANT with a HAMMERMILL SECONDARY

HERE'S the way to outproduce your competition, handle *any* aggregate producing job that comes along . . . and do it at the low production costs that mean a tidy profit on every job.

To meet specifications for any job with any quantity of finished product, the Unitized Plant's basic primary crushing, scalping, secondary crushing and bin units can be combined in dozens of different ways to produce any size products from aglime to rip rap, in volumes up to 250 tons per hour or more in quarry operations. And you get real economy in operating and maintenance costs.

There's a Cedarapids Unitized Plant combination designed to fit your needs. Call your Cedarapids distributor for all the reasons why Unitized Plants are your best bet for beating competition.

PRODUCES AGLIME AND THREE OTHER PRODUCTS IN ONE OPERATION!

The Cedarapids Unitized Plant shown above, utilizing a Portable 4033 Hammermill Secondary Plant, produced lime dust from 1/8" down and three other products of the same time . . . and at a rate of 210 tons per hour!

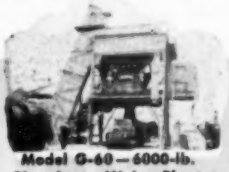
When your job calls for aglime or crushed limestone, or both in one operation, be sure to investigate all the advantages of Cedarapids Hammermills. They are available in 4033, 3033 and 2033 sizes, as individual units or in portable or stationary plants. Your Cedarapids distributor will gladly help you select the size best suited for your needs.

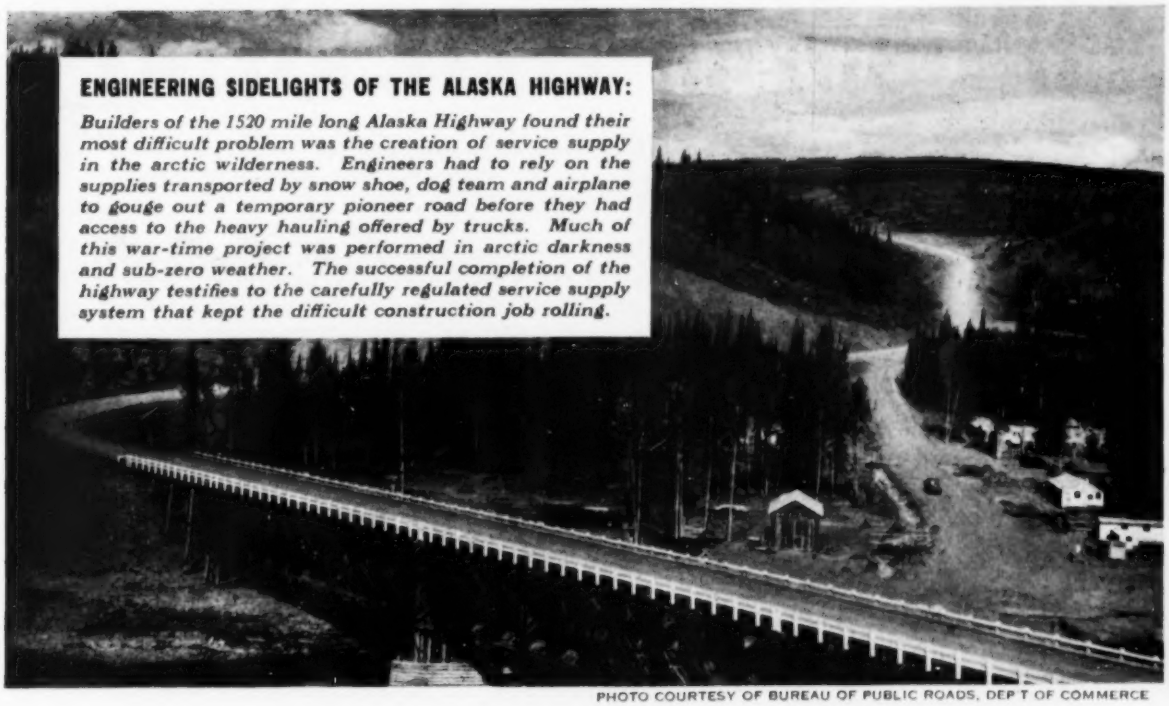
IOWA MANUFACTURING COMPANY Cedar Rapids, Iowa, U. S. A.

Master Bituminous Mixing Plant

Vibratory Soil Compactor

Motorized Head Pulley


Model G-60—6000-lb. Bituminous Mixing Plant



ENGINEERING SIDELIGHTS OF THE ALASKA HIGHWAY:

Builders of the 1520 mile long Alaska Highway found their most difficult problem was the creation of service supply in the arctic wilderness. Engineers had to rely on the supplies transported by snow shoe, dog team and airplane to gouge out a temporary pioneer road before they had access to the heavy hauling offered by trucks. Much of this war-time project was performed in arctic darkness and sub-zero weather. The successful completion of the highway testifies to the carefully regulated service supply system that kept the difficult construction job rolling.

PHOTO COURTESY OF BUREAU OF PUBLIC ROADS, DEP T OF COMMERCE

Traylor Apron Feeders Regulate Material Flow to Keep Production Rolling

Built in widths of 30" to 84" to any reasonable length.

Traylor

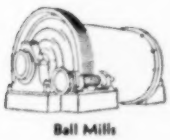
A Traylor Apron Feeder assures a steady, even flow of material from hopper to crusher. A Traylor feeder maintains crusher production at its most efficient and economical rate. In fact, a Traylor Feeder will practically double the output of your present aggregate plant by eliminating the peaks and valleys that result from feeding directly into the crusher. Traylor Apron Feeders also lower maintenance costs throughout the entire aggregate plant by eliminating shock loads and dry runs of crushers and allied equipment. Bulletin 1114 shows how controlled feeding can boost the efficiency of your plant. Send for your free copy today.

TRAYLOR ENGINEERING & MFG., CO.
636 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

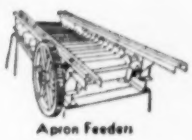
Primary Gyratory Crushers

Rotary Kilns

Secondary Gyratory Crushers


Ball Mills

Jaw Crushers


Apron Feeders

LOOK what they're saying about

ANACONDA SECURITYFLEX* SHOVEL CABLE

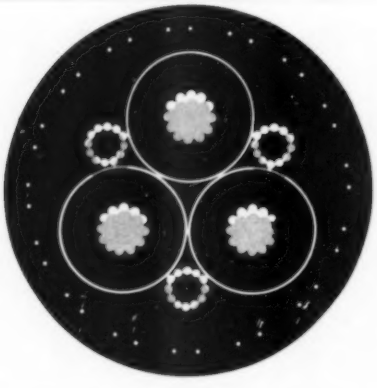
GENERAL MANAGER:
"This cable saves us money . . . there are far fewer breaks . . . and far fewer shorts from ground wires."

MINE ENGINEER:
"No matter how we run it over rocks, it holds up well. It must be the jacket. It wears like iron."

MINE FOREMAN:
"Securityflex sure is flexible . . . mighty easy to handle, too . . . the toughest cable we've ever used."

MINE SUPERINTENDENT:
"Our men can splice Securityflex easily and in less time. That saves us on down-time."

These are the things Anaconda salesmen hear daily about Securityflex Type SH-D Shovel Cable. Why not see *your* Anaconda Sales Office or Distributor for full information about this cable? *Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.* *Trade Mark 54338



AND THE REASON USERS CAN SAY THIS IS BECAUSE:

- **New BUTYL INSULATION provides better resistance to heat, moisture and damage by compression**
- **New NEOPRENE JACKET is tougher and more abrasion resistant**
- **RUBBER CORES cushion the ground wires . . . help prevent broken wires**
- **New COPPER-COTTON SHIELD is easier to splice**

the right cable for the job

ANACONDA®

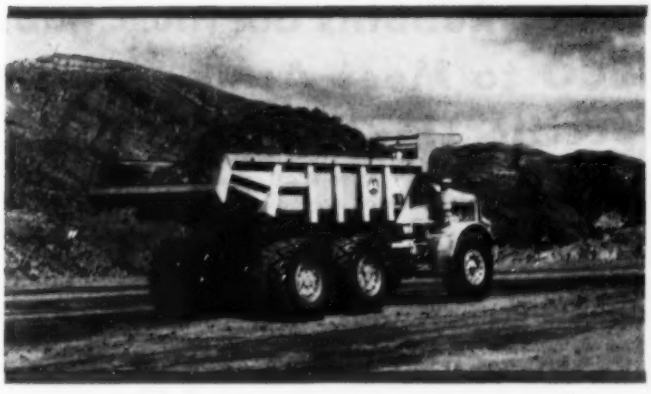
WIRE AND CABLE

Profits start in the Pit!

There are over 1200 "Eucs" on Minnesota's Iron Ranges—more than all other makes of off-the-highway trucks combined! Rear-Dumps, ranging in payload capacity from 15 to 50 tons, work the year around hauling ore and heavy overburden. On this tough "proving ground" Euclid performance has consistently paid off in more production and lower hauling costs.

Their dependable performance and high job availability, combined with big payload capacity and fast travel speeds, have made "Eucs" the preferred hauling equipment for open pit mines and quarries. Because they're built for tough off-the-highway service, Euclids make more profits for owners by cutting the cost of hauling stone, ore, overburden and waste material.

Your Euclid distributor can show you the way to lower hauling costs... have him provide a hauling production and cost estimate for your operation... there's no obligation, of course, so get in touch with him soon.



Working at a large open-pit copper mine in Arizona, a fleet of 34-ton "Eucs" maintain high production at low operating and maintenance cost. Their dependable performance and high job availability make "Eucs" an important part of the profit picture on this and many other mine and quarry operations throughout the world.

EUCLID DIVISION
GENERAL MOTORS CORPORATION
Cleveland 17, Ohio

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

New Lucky Peak Dam Gets Concrete Aggregate Screened with SECO'S

Photographed on the job—Boise, Idaho

Quinn-Robbins Co. Inc. Chooses SECO to Meet Army Engineers Specifications

Fifty thousand cubic yards of aggregate in four sizes—screened under the toughest conditions to rigid Corps of Engineers specification. That was Quinn-Robbins job on the Lucky Peak Dam at Boise. They picked SECO screens, four of them, to do the job, and delivered one hundred per cent!

Using a jaw crusher, a roll crusher, two sand screws, and four SECO screens, Quinn-Robbins washed and graded in one continuous operation — produced 600 cubic yards of 3", 1½", ¼" and sand every 7½ hours—a rate of 120 tons an hour! Quinn-Robbins relied on SECO screens to do the job right and on time, and fulfilled a tough contract.

How about your next contract? SECO MAKES A SCREEN TO FIT EVERY REQUIREMENT, TO STAND UP TO THE BIGGEST JOBS AND DELIVER HOUR AFTER HOUR, DAY AFTER DAY, TROUBLE-FREE OPERATION.

Send for FREE Catalog #203 today!

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

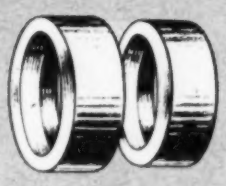
SEE YOUR NEAREST SECO DISTRIBUTOR FOR "BETTER SCREENING"

Let Seco screening experts recommend the right screen or screens for your job. Over 350 models in single, double, triple and three and one-half deck construction.

SCREEN EQUIPMENT CO., INC.

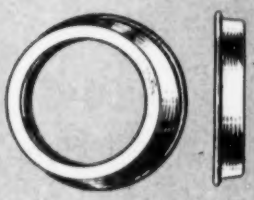
Buffalo 25, New York

FOR HEAVY EQUIPMENT PARTS... MIDVALE

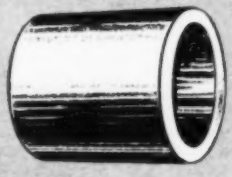


ROLL SHELLS

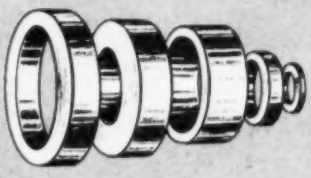
FORGED SHAFTS



TIRES



HEAVY FORGINGS



FORGED RINGS

STAINLESS CASTINGS

Midvale's complete facilities for making carbon, alloy and stainless steel forgings and stainless steel castings offer you a dependable source of supply for maintenance parts on your heavy equipment. Midvale engineers' knowledge and vast experience in designing and forging parts for mining and rock products equipment is available to help you solve your operating maintenance problems. Next time ask for Midvale's engineering and metallurgical service.

THE MIDVALE COMPANY- Nicetown, Philadelphia 40, Pa.

Offices: New York, Chicago, Pittsburgh, Washington, Cleveland, San Francisco

MIDVALE

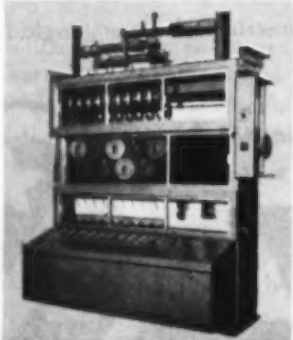
FORGINGS, ROLLS, RINGS, FLANGES, STAINLESS STEEL CASTINGS

"Repeater" automatically re-batches any mix selection

At the turn of a dial and push of a button, this Johnson commercial transit-mix plant produces any one of 120 different size and type batches of aggregates and cement. It weighs out any combination of materials you select on the central dial-scale control panel . . . and automatically repeats any batch selections for a pre-determined number of times.

The electric-control, 120-mix-selector panel can provide for 2500 or 3000 psi concrete, in any combination of materials, in ½ to 2 cubic yard batches. For each size batch there are individual selections for 3 to 6-inch slumps. Dial system makes it easy to change from one mix selection to another. To get any size or type of batch, operator merely turns the selector dial, sets the "repeater", pushes the "start" button . . . and the plant weighs out fast, with pinpoint accuracy. During the batching cycle, a lock prevents accidental change of the mix selector.

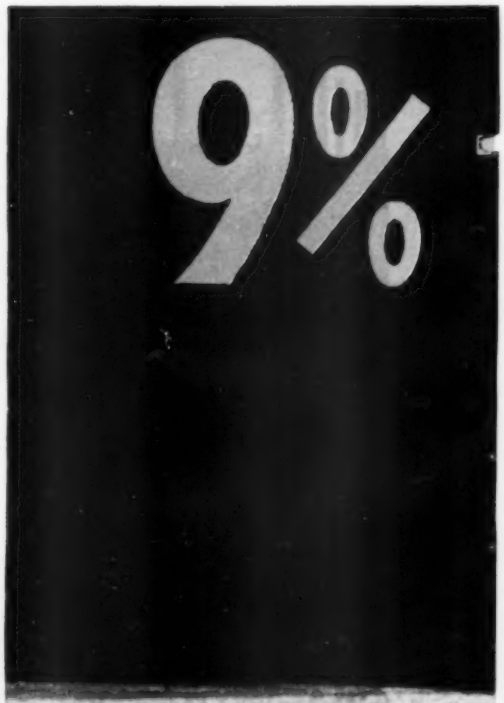
Nine material weigh-dials on the control panel have individual pen-recorders. Exact weight of each batch is automatically graph-recorded. Johnson batching equipment consists of: six 3000-lb. aggregate batchers (two with automatic moisture-compensators) . . . a 3000-lb. cement batcher with dual fill valves for selecting 2 types of cement . . . a 2000-lb. water weigh-batcher, and a 5-lb. (80-oz.) air entraining admix batcher. All are fully automatic.



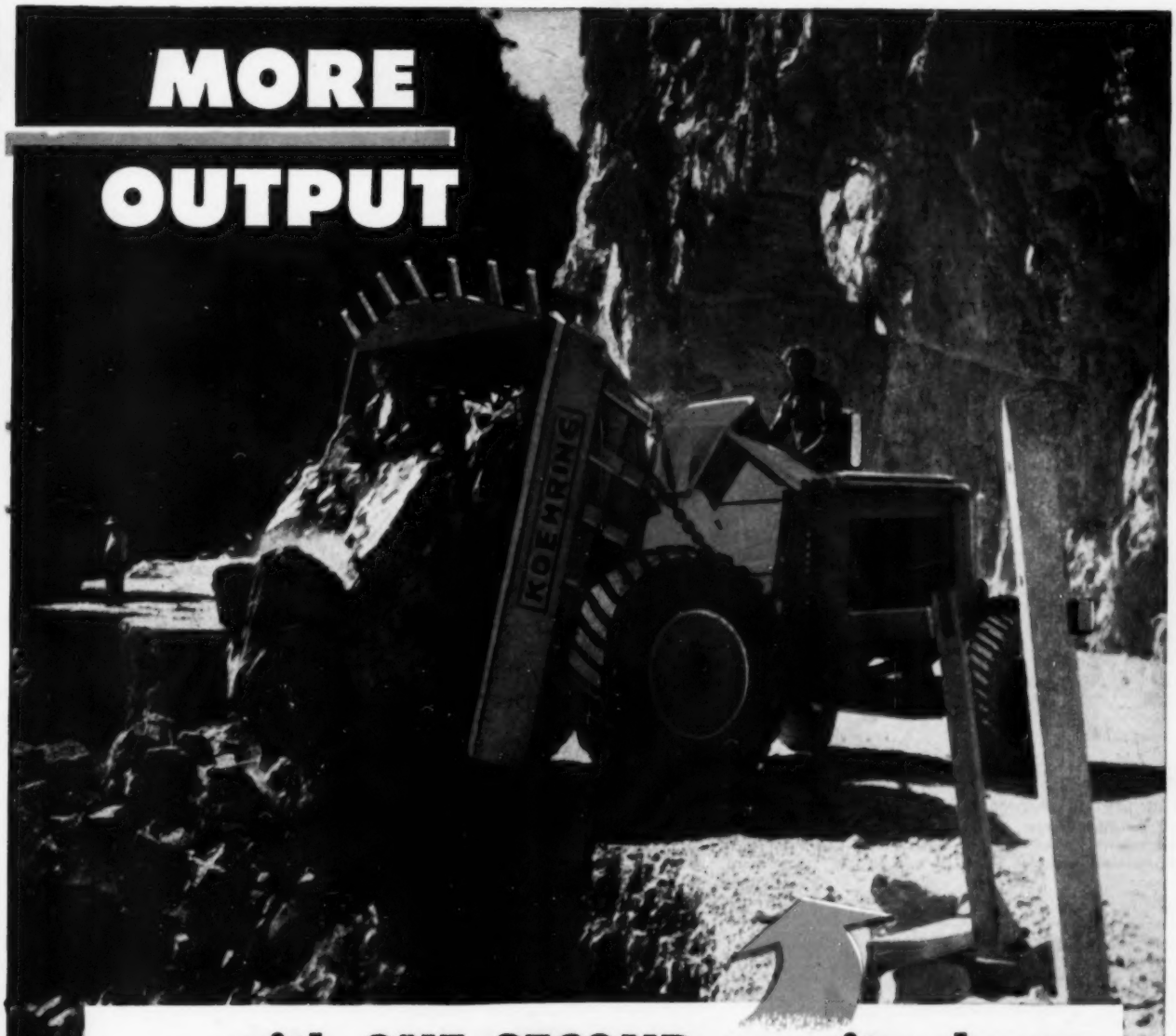
Whenever you plan a new plant . . . or want to modernize an existing set-up, look into the increased efficiency you can get with Johnson equipment. You'll find your Johnson distributor is at your service . . . ready to help at any time.

29

C. S. JOHNSON CO. CHAMPAIGN, ILLINOIS
Koehring Subsidiary



GRAVITY DUMP never balks . . . never wears out. You get the same one-second dumping every time . . . under heaviest loads, and in all temperature extremes. There are no hoist maintenance delays, no costly hoist replacement parts to eat into profits when you use gravity-dump Dumptors.



. . . with ONE-SECOND gravity dump

In just one second, Koehring heavy-duty Dumptor dumps its 6-yard load. Operator trips the body-release lever, and gravity tilts the scoop-shaped body 70°. One second later the load is out, and Dumptor is on its way back for the next load.

Because there's no waiting for slow-acting body hoists, Dumptor saves 15 to 25 seconds on every dump. This earns an important increase in extra yardage output. For example, take a typical 1,000-foot haul where an ordinary dump truck is making 16 trips an hour. Even if Dumptor took the same time to load, haul and return, it would average 17½ trips per hour on the same cycle. That's because Dumptor's one-second dumping advantage saves an average of 20 seconds on each trip . . . gains a total of 5.3 minutes more productive haul-time per hour. This, alone, adds 9% more yardage to your average hourly production.

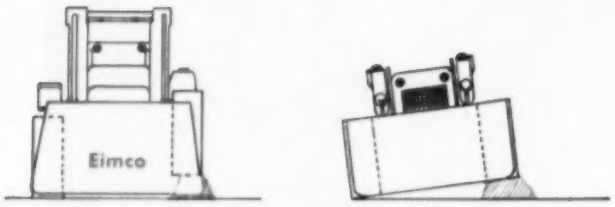
What's more . . . by eliminating only 2 turns each trip, Dumptor no-turn shuttle-hauling adds another 10% increase in yards per hour. You'll find Dumptor® well worth looking into. See your Koehring distributor soon.

CK330

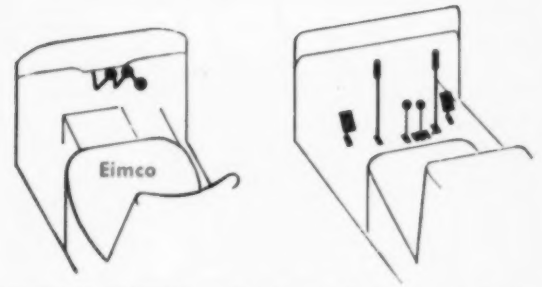
KOEHRING COMPANY MILWAUKEE 16, WISCONSIN
(Subsidiaries: KWIK-MIX • PARSONS • JOHNSON)

EIMCO

WORLD'S FINEST TRACTOR EXCAVATOR

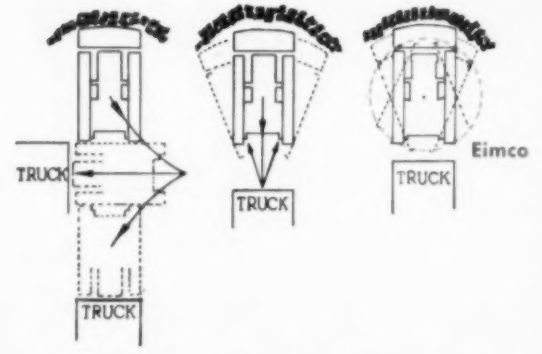


OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.

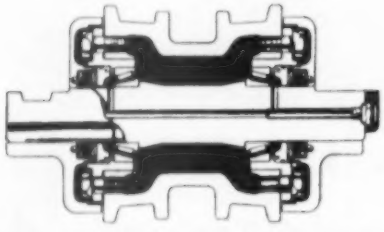


EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.

INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.

BETTER VISIBILITY — The operator sits up front where he can see. Loading, bulldozing or pushing are more efficient, eliminate guesswork.

Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

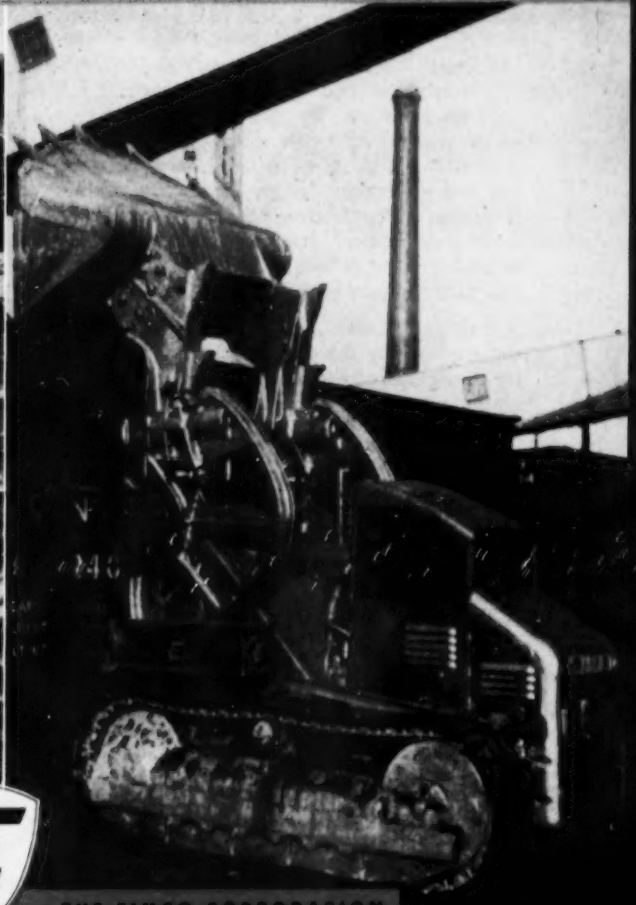
The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equalizer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

WITH COST SAVING ADVANTAGES

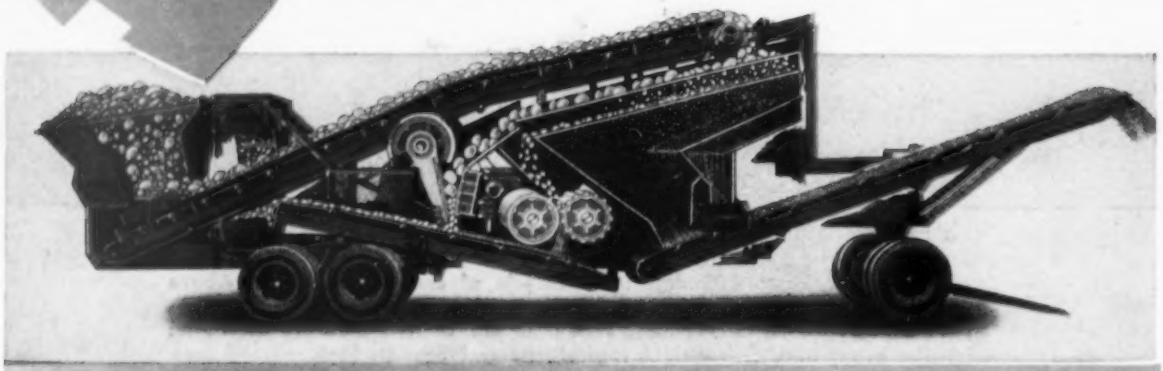
Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.



THE EIMCO CORPORATION

designed for MORE PROFITS

WITH UNIVERSAL'S "SCALPING DECK" METHOD



UNIVERSAL 880 GRAVELMASTER

Universal's "Scalping Deck" method of screening assures balanced loads to the jaw and roll crushers . . . provides greater efficiency and economy, protects screen, jaws, and rolls. You get better gradation of material, less jaw wear, less roll shell wear, longer screen life, savings in power, more effective use of screening area, faster material flow, greater plant output. These all add up to more tons per hour at less cost per ton with the new Universal 880 Gravelmasters.

Strictly for profit . . . buy a Gravelmaster. Get top engineering design. Get the rugged stability of a permanent installation plus ready portability to produce profitably anywhere.

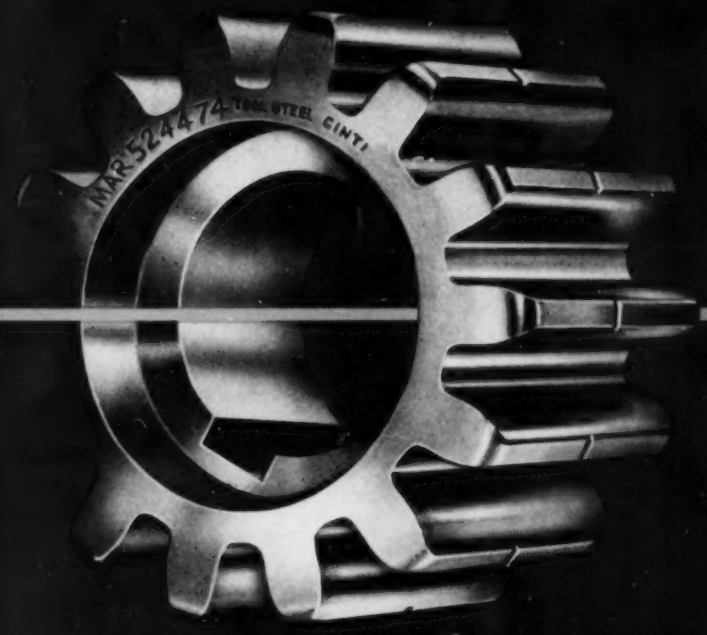
Complete, compact Universal Gravelmasters are built in a range of streamlined sizes with capacities from 75 to 320 tons per hour. They're used extensively as complete gravel crushing, screening and loading plants, or to step up production as secondaries following a primary in quarry operations. For complete details on the size that meets your requirements ask your Universal distributor or write.

MODEL	Junior "B"	Junior	Senior "R"	Super Senior
Jaw Crusher	10"x16"	10"x24" 10"x36"	30"x36"	30"x36"
Roll Crusher	18"x16"	24½"x16"	30"x24"	40"x24"
Gyrating Screen	2'x8' 2½	3'x10' 2½	4'x12' 2½	5'x12' 2½
Plate Feeder	19"	19"	25"	25"
Weight	28,600#	44,500#	54,000#	59,000#
CONVEYORS				
Under Conveyor	18"x10'	24"x14'	30"x18'	30"x19'
Feed Conveyor	20"x23'	24"x26'	30"x29'	36"x34'
Delivery Conveyor	24"x18'	24"x20'	30"x21'	30"x24'
	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding

UNIVERSAL ENGINEERING CORPORATION division of PETTIBONE MULLIKEN CORP.

619 C Avenue N.W., Cedar Rapids, Iowa
Phone 7105

4700 W. Division St., Chicago 51, Illinois
Phone Spaulding 2-9300



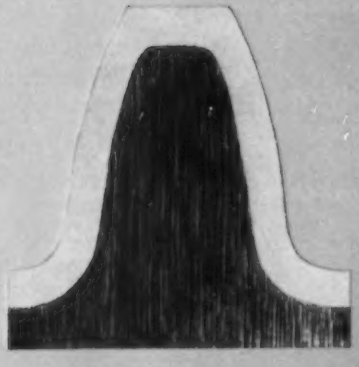
for guaranteed operating and maintenance savings

specify TSP gears and pinions

HERE'S WHY: "Tool Steel Process" gears and pinions are hardened by our special process. The file hard surface, to the full depth of permissible wear, gives *maximum life*. The core, refined for toughness and ductility, gives *maximum strength*. This combination gives TSP gears *maximum resistance* to fatigue. These are truly superior qualities found only in TSP gearing.

Made in all sizes to 80" pitch diameter, and in pitches from the heaviest to 10 D.P. Special designs made to your requirements.

You receive an absolutely positive written guarantee that TSP gears and pinions will give a longer life in the same service than any other product.



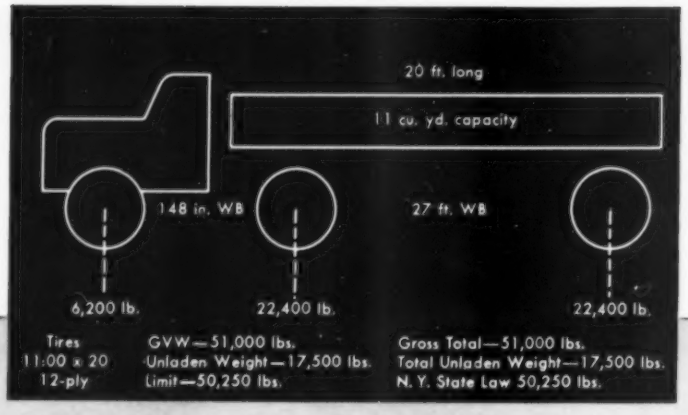
Section through TSP gear tooth, the gear of:

1. MAXIMUM RESISTANCE TO SURFACE WEAR
2. MAXIMUM RESISTANCE TO STRESS AND FATIGUE
3. MAXIMUM CORE STRENGTH AND TOUGHNESS

THE TOOL STEEL GEAR AND PINION CO.
CINCINNATI 16, OHIO, U. S. A.

AD 1005

The World's Standard of Quality Since 1909 for Gears • Pinions • Rolls • Wheels and Other Hardened Products



PAYLOAD diagram tells why Colonial's fleet of Whites pays off. Here is weight distribution on Model WC22PLT White with Marion Cable 11-yd. Dumper.

Colonial Sand & Stone Co., Inc., New York, tells how

FLEET OF WHITES

boosts payload

...reduces trip time

GET THE FACTS about the advantages of White Payload Design for your business—it pays off in extra payload, first day in service, and counts up to an amazing annual savings.

The diagram above shows how Colonial Sand & Stone Co., Inc., cuts down trip time, improves customer service because of the maneuverability and versatility of this unit and boosts payload.

Quality Whites carry bigger loads and have the rugged power and stamina to keep rolling up the trips and miles, day after day, regardless of load and terrain conditions.

See your White Representative for facts.

White

THE WHITE MOTOR COMPANY

Cleveland 1, Ohio

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

Farbizo Coal Co., Dover, Ohio

2 Years Old!...16,280 Hours!...No Repairs! ...Oil Consumption Unchanged! With Cities Service DC-330 Oil

ONE OF FARBIZO'S GRADALLS has done an outstanding job on a 38 core slag pit. Cities Service DC-300 oil keeps Farbizo's hard-working Gradall shovel in top shape.

IN THEIR TD 24 BULLDOZER TOO, Farbizo relies on heavy duty, high detergent Cities Service DC-300 oil. Heat-resistant, long-lasting and free-flowing DC-300 does the finest job possible.

Twin G.M.C. Diesels in Marion Shovel Give Outstanding Performance!

Here's the story from the Farbizo Coal Co.:

"Following are the pertinent facts with reference to the Marion 111 M Shovel using DC-330 Oil since January, 1951:

"Developed ample power with TWIN G.M.C. Diesels operating at 1550 R.P.M. Operated 16,280 hours with no motor breakage or repairs. Mined 203,000 tons of #5 coal from 36" seam with an average over burden of 35 feet hard pan shale with streaks of iron ore bands.

"Oil consumption 1 pint per week, oil and filters changed weekly. Consumption is same as when shovel was new. Motors were recently inspected but no repairs or replacements needed. Unusual performance praised by G.M.C. and Marion Shovel representatives.

"Similar results using DC-300 Oil in two Gradall shovels and International TD 24 Bulldozer."

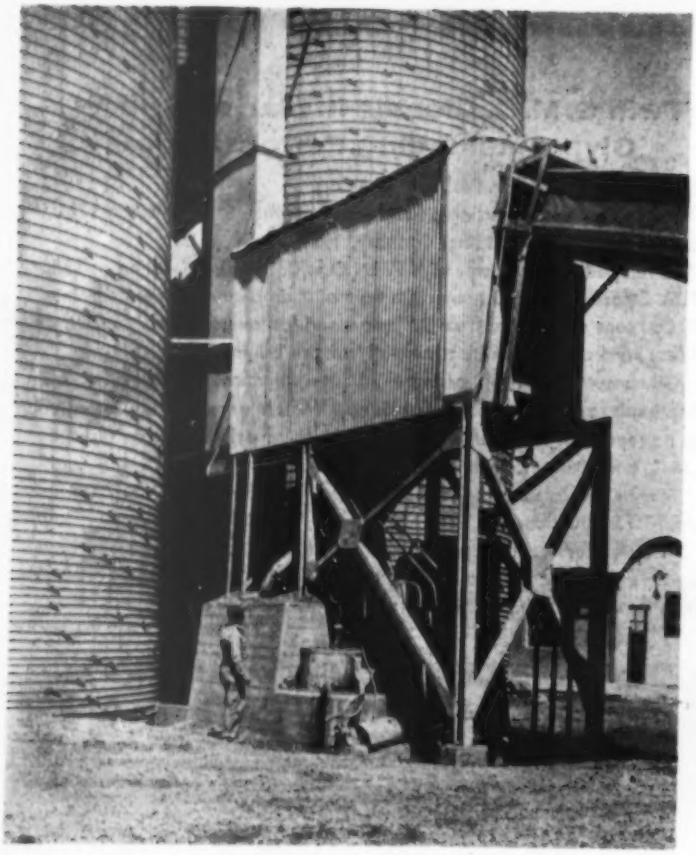
Let Cities Service lubricants protect the important investment you have in your machinery. Call your nearest Cities Service representative or write Cities Service Oil Co., Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Kennedy Crushers Help

Bondex, Inc., new lightweight aggregate plant at Ottawa, Kansas. L to R — receiving hopper for raw material, storage silo, kilns, dust collectors, kiln firing room, cooler, conveyors and crushing house, finished material silos and loading stage.



Raw material crusher house for KVS Gyratory Crushers.

Bondex, Inc. Produce More Expanded Shale Aggregates!

DOUBLE DISCHARGE KVS CRUSHERS
Double Aggregate Output!

Bondex, Inc., Ottawa, Kansas, operate a new expanded shale aggregate plant, equipped with the most modern machinery for peak capacity production.

Screened raw materials are fed by conveyors to KVS Gyratory Crushers for primary and secondary stage pulverizing to aggregate size. This equipment was selected by Bondex as being the best suited to handle their shale crushing.

All KVS equipment is built to rigid specifications . . . all parts standardized for ease of replacement . . . maximum use and minimum maintenance are assured through precision workmanship and specially hardened steel at all wearing points.

SEND FOR BOOKLETS DESCRIBING THE ENTIRE LINE OF KVS CRUSHING EQUIPMENT!

IT COSTS LESS.. TO OWN THE BEST!

KENNEDY - VAN SAUN
MANUFACTURING & ENGINEERING CORPORATION
TWO PARK AVENUE, NEW YORK
FACTORY DANVILLE, PA.

check these HENDRIX features...

for bigger profits

- ★ 20% to 40% LIGHTER than other buckets, type for type.
- ★ ALL WELDED CONSTRUCTION for greater strength and durability.
- ★ 14% MANGANESE STEEL chains, fittings and reversible tooth points.
- ★ FULL PAYLOAD EVERY TRIP, even in wet digging.
- ★ PERFECT BALANCE; handles easier, fills faster, dumps cleaner.
- ★ THREE TYPES: light, medium and heavy-duty with or without perforations.

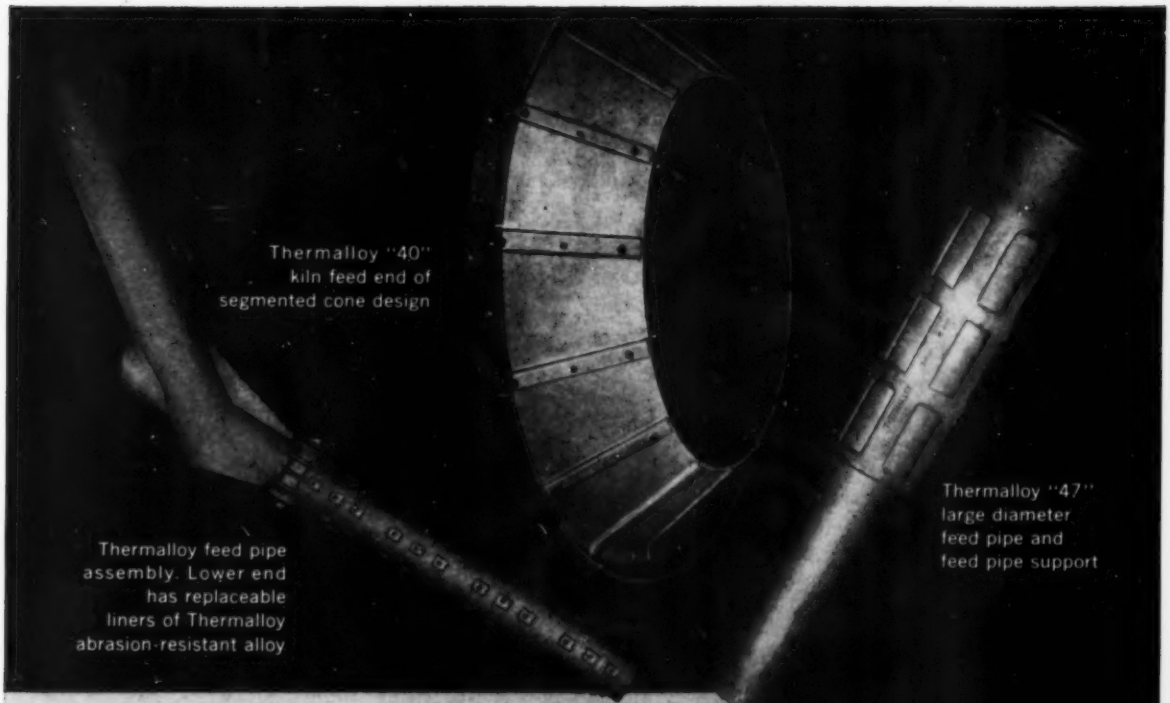
A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

Hendrix Lightweight Dragline Buckets

⅜ to 40 Cubic Yards

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA



Thermalloy "40" kiln feed end of segmented cone design

Thermalloy feed pipe assembly. Lower end has replaceable liners of Thermalloy abrasion-resistant alloy

Thermalloy "47" large diameter feed pipe and feed pipe support

THERMALLOY*

FEED ENDS and FEED PIPES For Rotary Kilns

Thermalloy "50" centrifugally cast feed pipe with welded flanges

Thermalloy "40" nose ring assembly

You'll get longer service life with less upkeep when you install Thermalloy Feed Ends and Feed Pipes in your kiln.

Thermalloy kiln parts are easy to install . . . no special "built-up" brick feed ends are necessary. And, Thermalloy is a tough, heat-resistant alloy developed specifically to take heavy loads and rough usage . . . to withstand elevated temperatures up to 2100° F. without scaling or cracking.

There are many different designs of Thermalloy feed ends and feed pipes available. An Electro-Alloys engineer can help you choose the type best suited to your requirements—for easiest installation and maximum service life.

Call your nearest Electro-Alloys Office, or write Electro-Alloys Division, 5004 Taylor Street, Elyria, Ohio.

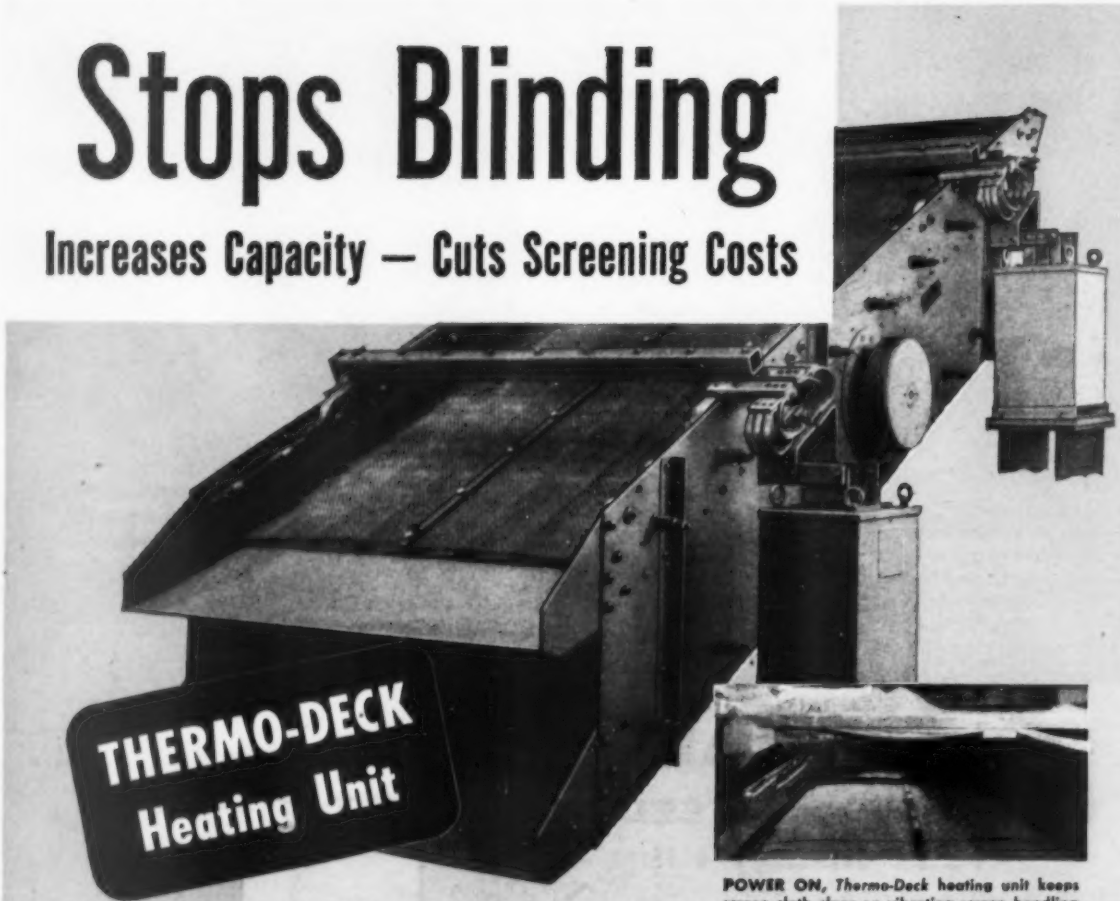
*Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

ELECTRO-ALLOYS DIVISION
ELYRIA, OHIO

Stops Blinding

Increases Capacity — Cuts Screening Costs



You can screen fine, moist material *continuously* with a *Thermo-Deck* heating unit. No down time required to clear fine or medium mesh screen cloth!

Heated screen cloth remains open . . . you get *more* tonnage through the screen and better separation.

Operating records prove that heated wire cloth screens last up to three times longer than non-heated cloth, because they do not have to be pounded free of blinded material. For the same reason, you save man-hours too. These lower costs increase your profits.

The *Thermo-Deck* unit can be applied to Allis-Chalmers screens in the field. See your nearby Allis-Chalmers representative for complete details. Or write Allis-Chalmers, Milwaukee 1, Wis., for Bulletin 07B7812.

A-4272

POWER ON, *Thermo-Deck* heating unit keeps screen cloth clear on vibrating screen handling fine, moist material.

POWER OFF, troublesome blinding occurs. This view shows same screen as above, with *Thermo-Deck* unit shut off.

For Intermittent Feed... ADD A *STA-KLEEN* DECK

If feed is intermittent, fine material may bake on the wire cloth during interruptions in feed. Heat which ordinarily is absorbed by moist material increases the temperature of the wire cloth sufficiently to cause any fine material to bake on. The addition of a *Sta-Kleen* deck effectively prevents this. Bouncing rubber balls between the screen cloth and a ball retaining deck clear the cloth of baked-on particles.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Thermo-Deck and *Sta-Kleen* are Allis-Chalmers trademarks.

Jaeger 365 has the "plus" air needed

Drilling 24" wick holes in blue muck

To drain and stabilize river bottom blue muck bordering Highway 51, the Leon B. Stilley Construction Co., of Marion, Ill., used a 24" auger to drill wick holes 25' deep, spaced 25' apart. (This was only the second time that sand wicks have been used in Illinois.)

To pull this auger in the sticky muck required a 15 hp air motor using 330 cfm of air @ 100 psi — too big a job for any "old standard" 315 compressor, but a natural for a Jaeger 365.

Jaeger, and Jaeger alone, is completely engineered throughout all ratings — 600, 365, 250, 185, 125 and 75 cfm — to match the air demands of modern tools. For example: Jaeger-engineered valves are 75% to 100% larger for free air flow and up to 10 times longer valve life. Valve seats and discs are machined on both faces simultaneously to parallel planes within 7/1,000,000 of absolute flatness. This exclusive method eliminates the distortions which "spring back" into valve discs under ordinary face grinding. You get positive leak-proof closure.

Ask your Jaeger distributor to show you the "plus" features of a Jaeger — its pressure lubricated, W-type compressor unit, its larger intercooler, air receiver, clutch and engine. They enable a Jaeger to deliver 15% to 25% more air than others at the lowest known cost per cubic foot. For full details, ask for Catalog JC-1.

THE JAEGER MACHINE COMPANY

602 Dublin Avenue, Columbus 16, Ohio

TRACTOR LOADERS • PUMPS • CONCRETE MIXERS • TRUCK MIXERS • PAVING MACHINES

No costly delays to change steels with TIMKEN® interchangeable rock bits!

Dozens of different Timken® rock bits fit the same drill steel!

YOU get quick bit changes plus the right bit for the job when you use Timken® multi-use and carbide insert bits.

It takes just a minute to unscrew one type of Timken bit and screw another different bit on the same drill steel—right on the job! No time wasted going after another set of drill steels.

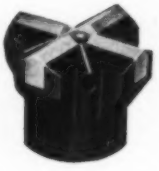
You get added drilling economy because the driller can switch to the most economical bit as the ground changes. And you eliminate the need for stocking a large inventory of different steels. Dozens of different Timken multi-use and carbide insert bits are interchangeable on the *same* drill steel.

Both Timken multi-use and carbide insert bits give you two important advantages: 1) made from electric furnace Timken alloy steel, 2) special shoulder union that keeps drilling impact from damaging threads.

Our rock bit engineers will be glad to help you with your drilling problems. They're experts in cutting drilling costs. There's no obligation. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

WHERE YOU CUT COSTS WITH TIMKEN MULTI-USE BITS

Most economical for rock of average hardness. With correct and controlled reconditioning, they give lowest cost per foot of hole when full increments of steel can be drilled.



WHERE YOU CUT COSTS WITH TIMKEN CARBIDE INSERT BITS

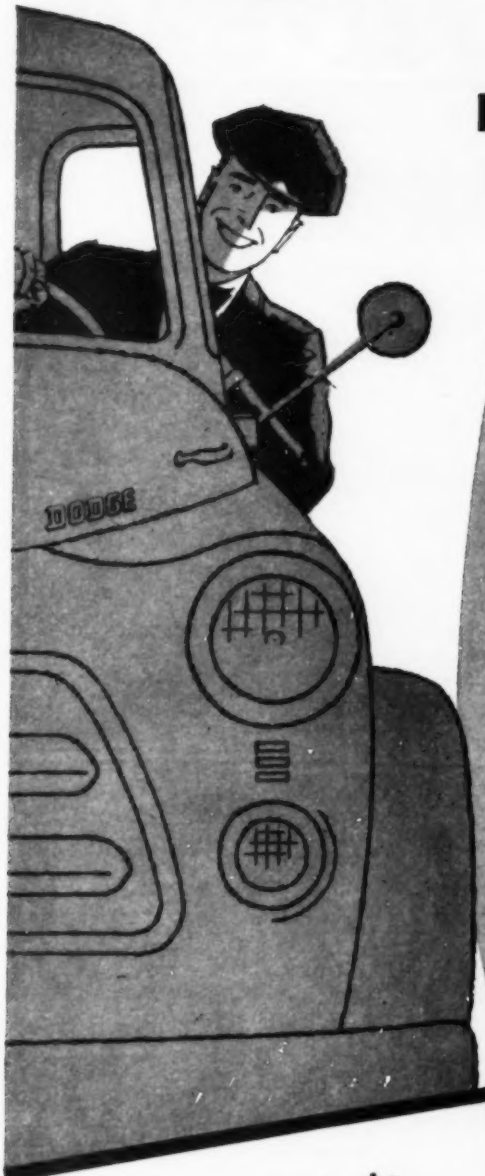
Give highest speed through hardest, abrasive rock. Also most economical for constant-gage holes, small-diameter holes, very deep holes.

. . . your best bet for the best bit . . . for every job

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

New DODGE "Job-Rated" TRUCKS



WITH

NEW! Roomiest Cab! Wide, 3-man cab with easy-chair seat. 951 sq. in. windshield and best all-around visibility of any make.

NEW! Sharpest Turning! 39° turning angle, short wheelbase design for top maneuverability. Easiest handling trucks there are!

NEW! V-8's and Sixes! Most powerful V-8's in popular field—133 to 172 h.p. Plus famous Dodge Sixes. 7 engines in all.

NEW! Low-Built Lines! Built low for better road stability, easier loading, ground-hugging good looks. Lower step for easier cab entry.

ALL ADD UP TO

"A better deal for the man at the wheel"

All-new Dodge trucks offer a better deal in low operating and upkeep costs, too . . . are priced with the lowest. Make it a point to call your friendly Dodge dealer—or drop in to see him soon. You'll like these new trucks!

See "Break The Bank" with Bert Parks on TV (ABC, Sundays).
Hear "The Roy Rogers Show" on radio (NBC, Thursdays).
See "Make Room For Daddy" with Danny Thomas on TV (ABC, Tuesdays).
Enter the Dodge 40th Anniversary All America Contest. See your dealer.

for clean aggregate high capacity

Three of the five 60-inch diameter Telsmith Super-Scrubbers in Colonial Sand & Stone Co., Inc. plant, Port Washington, N. Y.

Most of the better sand and gravel pits are exhausted—those now being used contain more clay which must be eliminated. Many states now require that crushed stone be scrubbed before screening to eliminate soft stone, clay and dirt. This demands a better scrubber—one which will eliminate large amounts of clay with a minimum of expense for installation, water, power, and up-keep. Telsmith's answer is the Super-Scrubber—proven successful in many of the toughest pits and quarries.

Outstanding features of the Super-Scrubber are its high speed, terrific impact and grinding action—very much like that of a ball mill. Aggregate travels from feed to discharge end against clean water flowing in the opposite direction—emerges clean—with clay and dirt disintegrated and carried away by the water. Best results with maximum scrubbing efficiency on coarse aggregate are obtained with the sand removed.

Designed to carry a heavy aggregate load—Telsmith Super-Scrubbers give years of service with a minimum of up-keep expense. Four sizes: 60-inch to 96-inch diameter—capacities, 50 to 250 tons per hour. Send for Bulletin 266.

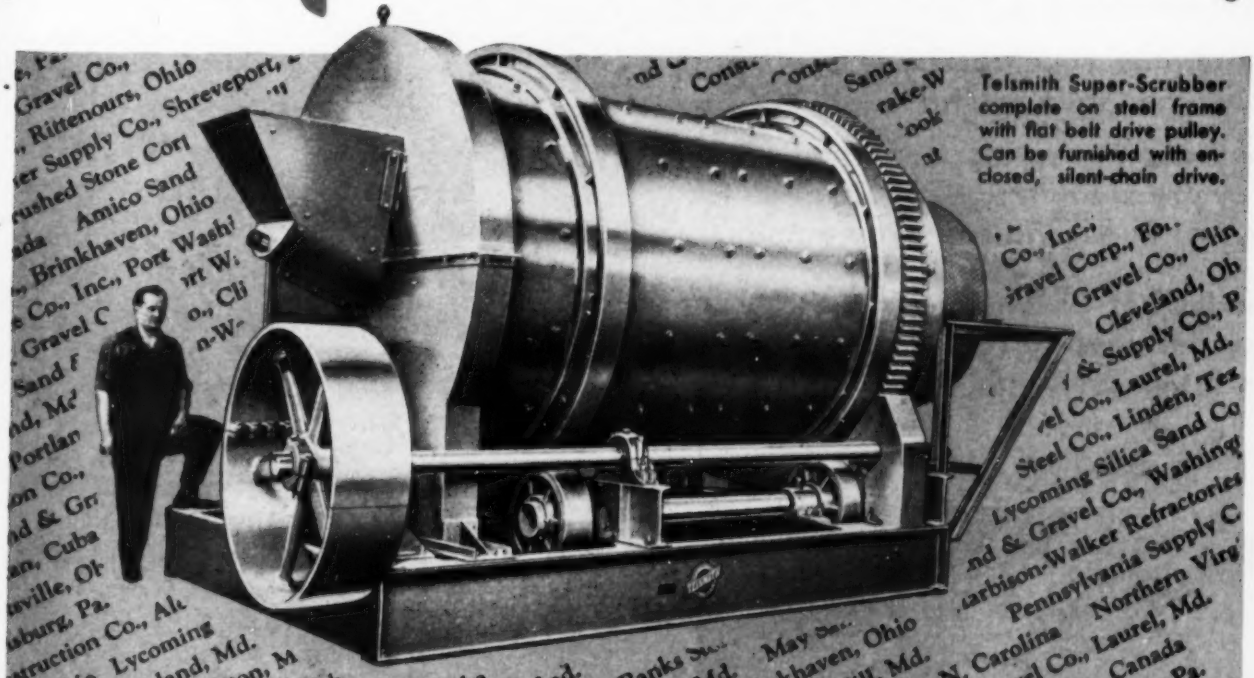
SS-1

Co., Rittenh
ether Supply Co.,
Fiala Crushed Stone Corp
Amico Sand & Gravel C...
Kilbuck Sand & Gravel
Colonial Sand & Stone Co.,
New Enterprise Stone &
Contee Sand & Gravel Co., L
Sheffield Steel Co., L
Lycoming Sili
Distri

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

TELSMITH

Super-Scrubbers®



Telsmith Super-Scrubber complete on steel frame with flat belt drive pulley. Can be furnished with enclosed, silent-chain drive.

Gravel Co., Rittenours, Ohio · Amico Sand & Gravel Corp., Fort Wayne, Ind. · Drake-Winkelman, Cuba · Buffalo Sand & Gravel · Amico Sand & Gravel Co., Morrisville, Pa. · Davis Sand & Gravel Co., Clinton, Md. · Kilbuck Sand & Gravel Co., Brinkhaven, Ohio · Silverhill Sand & Gravel Co., Silver Hill, Md. · Grove Stone & Sand Co., Swannonoa, N. Carolina · Prince George Sand & Gravel Co., Laurel, Md. · J. Cooke, Ltd., Aldershot, Ont., Canada · Fiala Crushed Stone Corp., Annville, Pa. · Banks Stone & Sand Co., Shreveport, La. · Meriwether Supply Co., Shreveport, La. · New Enterprise Stone & Lime Co., Inc., Port Washington, N. Y. · Grove Construction Co., Portland, Ore. · May Sand & Gravel Co., Washington, D. C. · Valley Mould & Iron Co., Cleveland, Ohio · Harbison-Walker Refractories, Garrettsville, Ohio · Pennsylvania Supply Co., Harrisburg, Pa. · Northern Virginia Construction Co., Alexandria, Va. · Sharon Silica Co., Jackson, Ohio · Contee Sand & Gravel Co., Fairland, Md. · Colonial Sand & Stone Co., Inc., Port Washington, N. Y. · Fenton Construction Co., Ashland, Ohio · Buffalo Sand & Gravel Co., Silver Hill, Md. · Miami Gravel Co., Rittenours, Ohio · Drake-Winkelman, Cuba · Kilbuck Sand & Gravel Co., Inc., Fort Wayne, Ind

Here's the Machine for LO

Be fair with yourself. Does your present loading method really give you the lowest cost for loading trucks?

Does it operate continuously, or does it depend on the zeal and skill of the operator?

Does it tie up your trucks unnecessarily during the loading operation? Or does it release them as rapidly as possible?

Remember your trucks are paying off only when they are hauling.

They don't pay you one dime while they are waiting to be loaded. In fact every idle second costs you money.

The Barber-Greene Model 543 Bucket Loader was designed to save loading time, truck time, and job time.

...solves your loading problem, the ... the answer. Its crawler-mounted ... it to load from stock pile, windrow ...

see your **B-G distributor** ...or write

W COST LOADING

Here is a picture of a man making money. He has eliminated unnecessary loading costs and truck delays. For complete information on the Barber-Greene Loader, contact your B-G distributor or write Barber-Greene Company, Aurora, Illinois.

Handling costs are a part of your material costs. To keep your material cost down, use the proven, most economical way of loading trucks. Only a B-G Bucket Loader has so many outstanding exclusive features.

The hydraulically-controlled ... mits dual spotting. One ... the other is being loaded. There is ... between trucks.

Barber-Greene

Aurora, Illinois, U. S. A.

Pulverizing

EXTREME HIGH FINENESS RANGE

with the

RAYMOND VERTICAL MILL

THIS specialized Fine Grinding Unit with Double Whizzer Air Classifier has an outstanding record in the production of powdered materials in the lower micron sizes.

The Vertical Mill operates in a fineness range beyond that of ordinary mills. Many types of products can be reduced to 95% to 99% finer than 15 to 20 microns. On some materials, finenesses as high as 95% to 99% finer than 5 to 10 microns have been produced.

Wherever you have an exacting fine grinding job, requiring extreme fineness and uniformity in the end-product, you can depend on the Vertical Mill for meeting top specifications with consistent low tonnage costs.

There are many successful installations now operating in modern plants on: various non-metallic minerals, limestone, marble, kaolin, chemicals, talc, graphite, dyestuffs and many special materials.

If you have a similar grinding problem, Raymond experience is your assurance of getting the right mill for thejob.

This Raymond Bulletin No. 70 gives detailed information on superfine grinding operations. Write for your copy.

COMBUSTION ENGINEERING, INC.

Raymond Division

1321 NORTH BRANCH ST., CHICAGO 22, ILLINOIS

SALES OFFICES IN PRINCIPAL CITIES

"Save money? Sure!"

THAT, in a nutshell, tells you why so many wire rope users in the quarries prefer Roebling wire rope . . . it speeds up operations . . . lasts longer on the job . . . saves money that really adds up.

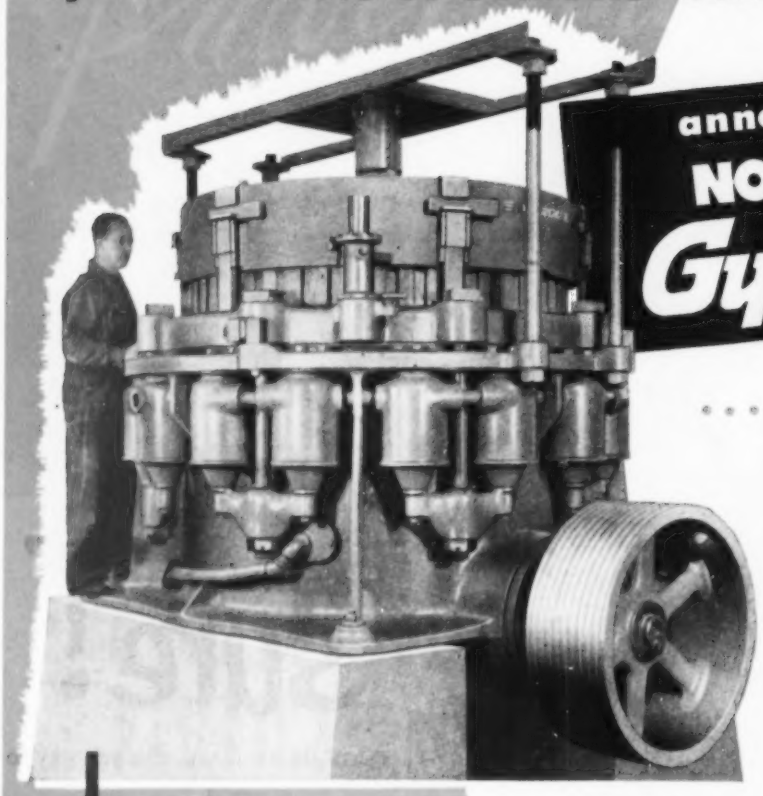
For the last word in wire rope efficiency and economy, call your nearest Roebling office or distributor for a Roebling recommendation.

ROEBLING CF&I

A subsidiary of The Colorado Fuel and Iron Corporation

JOHN A. ROEBLING'S SONS CORPORATION, TRENTON 2, N. J. BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4501 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

A "*FINER*" REDUCTION CRUSHER . . .
by the builders of SYMONS® CONE CRUSHERS



announcing the NORDBERG *Gyradisc*

. . . a REVOLUTIONARY MACHINE for the production of large tonnages of extremely fine product

After years of extensive research and development, Nordberg now presents the *GYRADISC* . . . a new, revolutionary method of comminution that has been proved in the production of large tonnages of fine product in both metallic and non-metallic ore and mineral service.

The Nordberg *GYRADISC* is a unique combination of practical design features and original principles of operation resulting from Nordberg's background and long experience with successful crushing machinery, such as the world-famous SYMONS Cone Crusher. The Nordberg *GYRADISC* is as revolutionary in the reduction of large quantities of material to extremely fine sizes as the SYMONS Cone Crusher is in the realm of crushing.

For full details, send for your copy of the new *GYRADISC* Bulletin 228—just off the press.

NORDBERG MFG. CO., Milwaukee, Wisconsin

FEATURES

- **SOUND DESIGN AND CONSTRUCTION . . .** embodying proved reduction principles, ease of adjustment, and increased tonnage per horsepower.
- **LARGE CAPACITY . . .** ideal feed is product containing material minus 1", ½", or ⅜", and fines. Close setting not required to produce large tonnage of fines.
- **UNIQUE FEED ARRANGEMENT . . .** thorough mixing assured by compound action of feed plate gyration and rotation.
- **EXCLUSIVE PNEUMATIC RELEASE MECHANISM . . .** reduces stresses—holds bowl structure rigidly to main frame. Automatic tramp iron protection. Provides immediate starting, even with crushing cavity full of material.

SYMONS . . . A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

NORDBERG

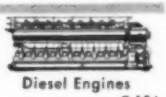
MACHINERY FOR PROCESSING ORES and INDUSTRIAL MINERALS

NEW YORK • SAN FRANCISCO • DULUTH • WASHINGTON
TORONTO • MEXICO, D.F. • LONDON • JOHANNESBURG

Symons Gyratory and Cone Crushers

Mine Hoists

Symons Vibrating Grizzlies and Screens



Diesel Engines

C 154

Our house? Built with wire rope?

Not only yours, Mr. Brown, but millions of others too.

A miracle of the postwar years has been the construction of more than 7-million new dwelling units. Accomplishment of this tremendous task has called for "muscles of steel"—rugged wire rope that is a vital factor in mining the ore, quarrying the stone and bringing out the timber that comprise the basic components of every house and building—large or small.

Supplying these "muscles of steel" to the giant that is American industry is our big job here at Wickwire—a job we've been doing well for over half a century.

In the mines . . . the quarries . . . the logging camps—and wherever wire rope is used, they'll tell you that for utmost safety, longer life and most economical service you can always count on the quality and strength that is built into Wickwire Rope.

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver
Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
PACIFIC COAST DIVISION—Los Angeles • Oakland
Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga
Chicago • Detroit • Emlenton (Pa.) • New Orleans • New York • Philadelphia

WICKWIRE ROPE

CF&I PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1073

20-MILE ROUND TRIP EVERY 50 MINUTES

INTERNATIONAL 190 Series. GVW ratings, 30,000 to 38,000 lbs. Gasoline, LPG or diesel power.

INTERNATIONALS cut costs in hauling the clay of 300 uses

Mining kaolin clay is a tough job. But this valuable clay of a 27,000-acre area in Georgia has over 300 uses, from the manufacture of ceramics to coatings and fillings for paper. Mining it is worth all the trouble.

To cut costs in this open-cut mining operation requires trucks that move fast over the road and *stay on the job*, under tough off-highway conditions. The INTERNATIONAL 6-wheelers used by a leading operator in the area cover a rugged 20-mile round trip from pit to processing plant. Their INTERNATIONALS make it in 50 minutes, day after day, with 9-yard loads, over 12% grades.

Truck-to-job specialization is one reason why INTERNATIONALS keep costs down. No other truck line offers so many thousands of variations for exact job specialization. *Dependability* is another reason. Long life and unequalled performance have made heavy-duty INTERNATIONALS the choice of cost-conscious truck buyers for 22 straight years.

See your INTERNATIONAL Dealer or Branch for *dependable* trucks, built to meet exactly the needs of your mining operation —to cut your hauling costs.

24 new 6-wheel models!

GVW ratings, 22,000 to 90,000 lbs., with new INTERNATIONAL bogie or trailing axle. Engines from 130 to 356 horsepower. Choice of gasoline or LPG power. Diesel engines available in models with GVW ratings of 30,000 lbs. and over. Transmissions, axle ratios for any needs. America's most complete truck line —170 basic models from ½-ton pickups to 90,000 lbs. GVW off-highway models.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

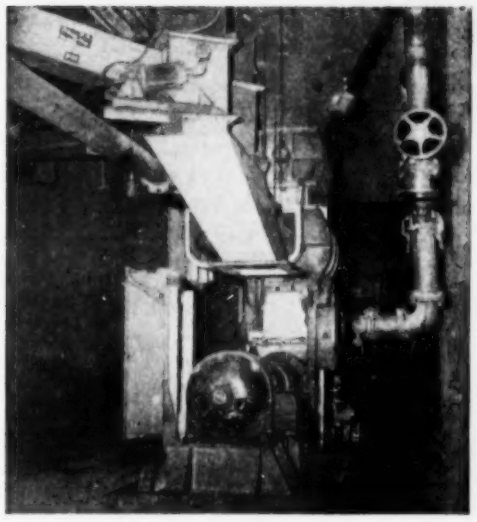
International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

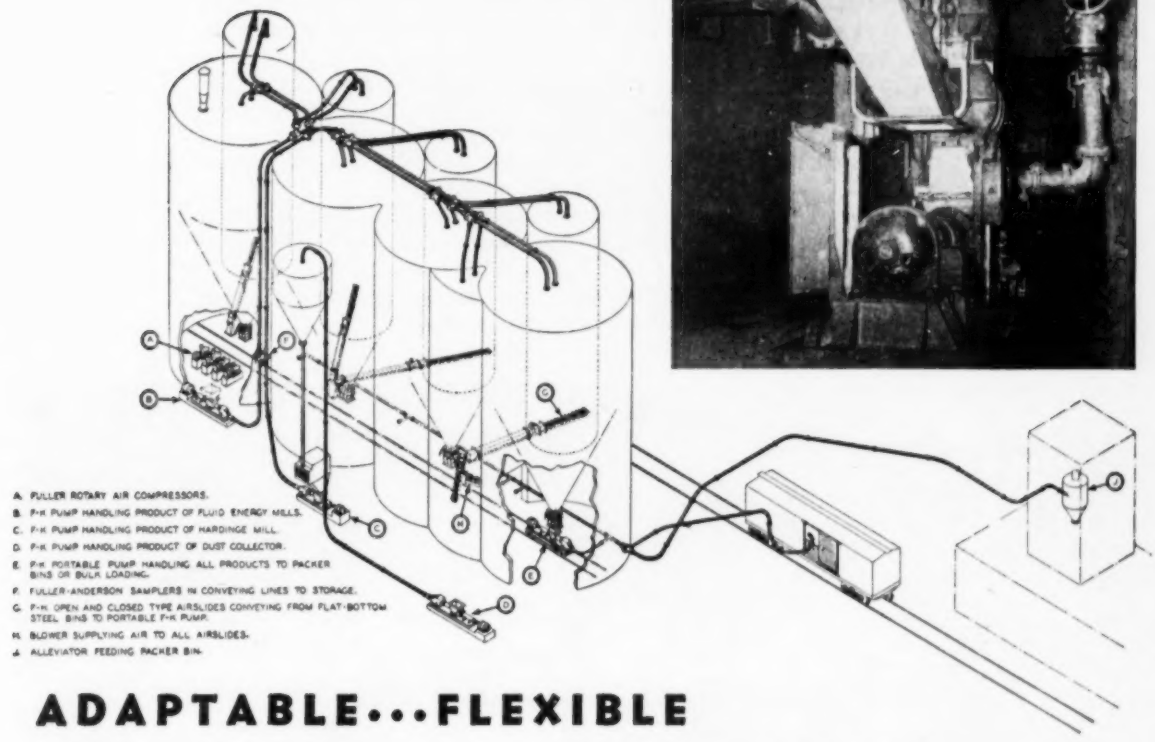
Better roads mean a better America

INTERNATIONAL® TRUCKS

"Standard of the Highway"

Fuller-Kinyon Portable Pump underneath silos. F-H Airslide (upper left) from flat-bottom bin, for delivery to pump.




A. FULLER ROTARY AIR COMPRESSORS.
B. F-H PUMP HANDLING PRODUCT OF FLUID ENERGY MILLS.
C. F-H PUMP HANDLING PRODUCT OF HARDINGE MILL.
D. F-H PUMP HANDLING PRODUCT OF DUST COLLECTOR.
E. F-H PORTABLE PUMP HANDLING ALL PRODUCTS TO PACKER BINS OR BULK LOADING.
F. FULLER-ANDERSON SAMPLERS IN CONVEYING LINES TO STORAGE.
G. F-H OPEN AND CLOSED TYPE AIRSLIDES CONVEYING FROM FLAT-BOTTOM STEEL BINS TO PORTABLE F-H PUMP.
H. BLOWER SUPPLYING AIR TO ALL AIRSLIDES.
J. ALLEVIATOR FEEDING PACKER BIN.

ADAPTABLE...FLEXIBLE

FULLER-KINYON and F-H AIRSLIDE® CONVEYING SYSTEM

Conveying of dry pulverized materials in bulk, by air, is the efficient, economical, modern way. Materials such as talc, clays, Portland cement, pulverized coal, fly ash, limestone dust, Fuller's earth, catalysts, can be handled.

Adaptability and flexibility are important features of the Fuller-Kinyon and Airslide Systems. The plant illustrated originally comprised four concrete storage silos, served by a Fuller-Kinyon Portable Pump, operated on a track underneath the silos, for conveying talc to packer bin and bulk-car loading. Later, storage was increased by the addition of five flat-bottom steel bins adjacent to the concrete silos. For economical conveying from these bins, F-H Airslides were installed, to convey to the F-K Portable Pump. Later, for more advantageous packing and loading, the packer bin was moved to a new location. These additions and changes required no major alteration to the Fuller-Kinyon system, merely the extending of the conveying pipe line to the new packing plant location.

Pneumatic conveying systems can be installed without interfering with existing structures or equipment, without interrupting production. May we suggest that you have us make a study of your conveying problems. Our findings and recommendations may give you an entirely new concept of conveying.

Fuller Company is the exclusive manufacturer of air gravity conveyors, except for use in motor vehicles, under Huron Portland Cement Company U. S. Patent Nos. 2,316,814, 2,517,837, 2,527,394, 2,527,455, 2,527,466, 2,527,488 and Patents Pending.

Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • COMPRESSORS AND VACUUM PUMPS FEEDERS AND ASSOCIATED EQUIPMENT

FULLER COMPANY,
Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

G-78

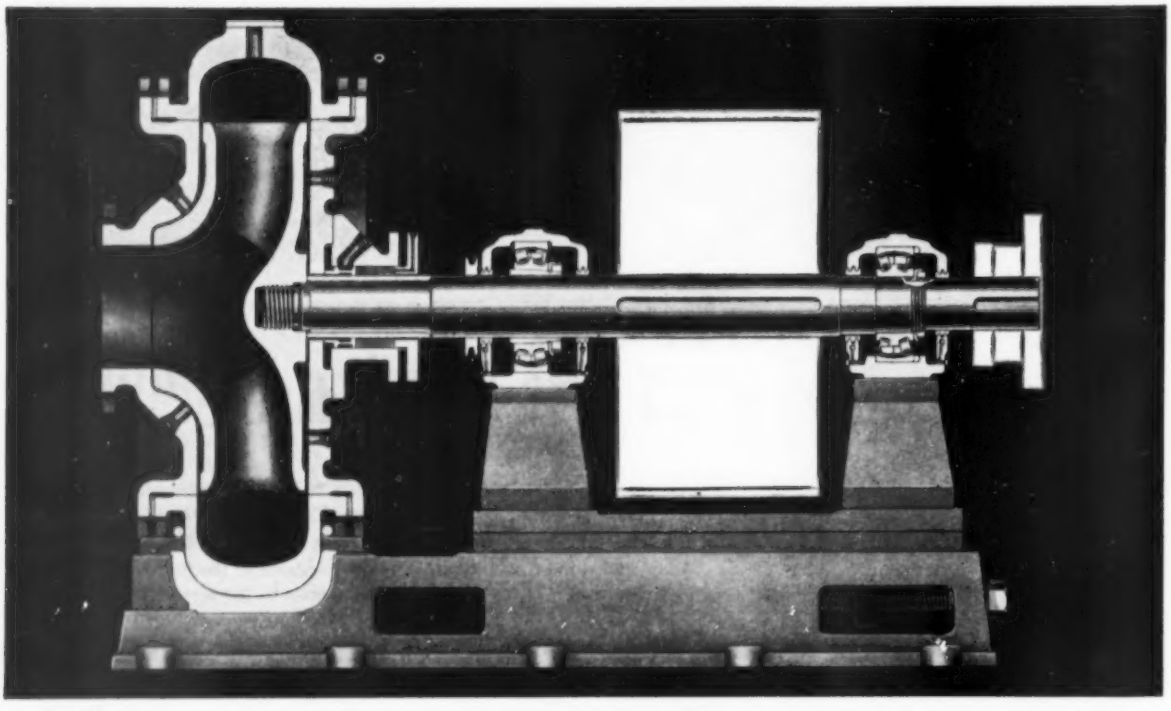
NOW... a manganese steel pump at cast-iron prices

Component for component, this new Amsco manganese steel pump, with spherical roller bearings, is no more costly than a cast-iron pump similarly equipped.

Equally important are the features that have been built into this new pump. It has simplicity of design to hold down maintenance costs. Pump-shaft keyways allow for direct end or center pully connection for power transmission. All water end parts are of cast manganese steel to provide resistance to impact and to give long service life.

Perhaps most important, this new pump incorporates the Amsco "Counter-Flow" principle which increases pumping efficiency and trouble-free operation.

See the new Amsco Model SB-CF before you buy another pump. For information, write Amsco Division, Chicago Heights, Ill.



TYPICAL CAPACITY OUTPUT CHART OF 6" MODEL

Capacity GPM	Output with various percentages of solids					
	10%		15%		20%	
	Yds/hr	Tons/hr*	Yds/hr	Tons/hr*	Yds/hr	Tons/hr*
800	24	32	36	48	48	64
1000	30	40	45	60	60	80
1200	36	48	54	72	72	96

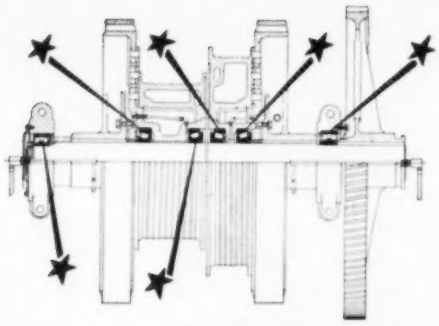
*Aggregate assumed to weigh 100 lbs per cu ft

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

LIMA'S

shafts and drums roll on anti-friction bearings



STARS INDICATE LOCATION OF ANTI-FRICTION BEARINGS IN DRUMS AND PILLOW BLOCKS

As a result of twenty-five years' experience with anti-friction bearings, Lima design engineers know exactly where to put them to give you maximum benefits. This cut away view shows how Lima utilizes anti-friction bearings in the drums. X-ray vision would show you how Lima uses them throughout the main machinery on all shafts and other important parts.

This modern means of eliminating destructive friction benefits LIMA owners through faster operating speeds and lower upkeep. Anti-friction bearings also maintain perfect shaft alignment and insures smoother, easier clutch action.

Two LIMA Type 803 Shovels, equipped with 24' 6" booms, 18' dipper handles, 2½ cu. yd. dippers.

COMPARE! No other machine gives you as much as LIMA!

1. Bronze bushings in tread, idler and drive rollers are protected by piston-type dirt seal rings and retainers.
2. All gears, smaller parts and shafts which are subject to extra wear are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation to eliminate excess counterweight.
4. Anti-friction bearings, used at all important bearing points, reduce destructive friction, fuel consumption and lubrication requirements.
5. Big capacity drums and sheaves lengthen cable life by reducing the need for double wrapping and sharp bends in cable.
6. Full air controls on travel, hoist, swing and boom hoist, result in smoother, more precise operation, minimum maintenance and less operator fatigue.
7. Torque converter (optional) automatically adjusts speed to load requirements, minimizing shock loading, making performance smoother and faster.
8. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

COMPARE and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA

SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

BALDWIN-LIMA-HAMILTON CORPORATION
Construction Equipment Division
LIMA, OHIO, U.S.A.

We tie truck axles in

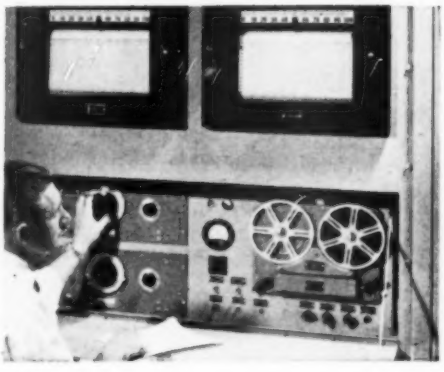
in the new Timken-Detroit indoor proving ground . . . and only

We twist, shock-load, abuse, and torture them. Match every conceivable hauling condition. Then add a few brutal tricks of our own!

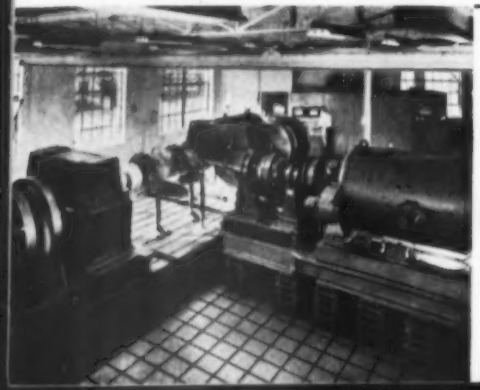
Why? So you'll know in advance, and *for sure*, that a Timken-Detroit axle can take the punishment it was designed for. More rugged, grueling punishment than any other axle made!

To prove it, we capsuled a multi-thousand acre proving ground into one room. Here our engineers can put 50 years of experience in building axles for trucks, buses and trailers to work—subjecting axles and gearing *indoors*, to any *outdoor* operating condition.

Such exacting research pays off for you in: longer axle life; less maintenance, repairs and downtime; reduced operating expenses. This is why Timken-Detroit axles are preferred by manufacturers and operators everywhere.



This is our "truck driver." He works in our "Torture Chamber." Above him are graphs showing speed and torque performance under any operating condition he chooses . . . soft ground at full load . . . mountains . . . express highways or side roads. With special dials, recorders and electronic devices, he actually *drives* the axle with scientific accuracy from his chair!



How TDA proves axle quality in this "Torture Chamber"

We pick one of our axles at random . . . then duplicate a hauling condition, hour after hour, day after day . . . simulating half a million miles of the toughest driving situations in just a few days. Or "invent" a test like going up hill with a full load from California to New York nonstop. There is no other axle testing like it in the world!

Soft ground? Heavy load—all up-grade? That's a tremendous strain on an axle. But it's nothing compared to what we do in the indoor proving ground! For instance—we take an axle shaft and twist it 14° forward and backward, 36 times a minute, 24 hours a day, week after week. And that's only one test to give you low-cost performance, long axle life regardless of your hauling conditions.

Hauling wet mix? You need Timken-Detroit axles—duplicates of axles that have been given the "works" in our indoor testing laboratory. Simulating the punishment the axle would get hitting a chuck hole with a capacity load every 4 seconds, 24 hours a day, month after month! And it's all done to save you money on maintenance and repairs—make you more money every load.

knots

Timken has it!

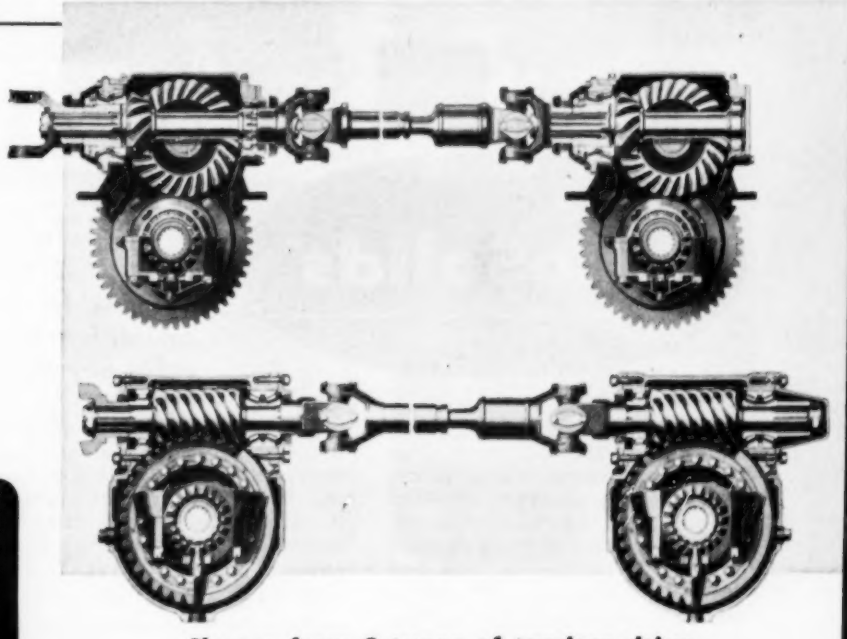
TIMKEN *Detroit* **AXLES**

TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN

The Accepted TDA Standard
TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job

WORLD'S LARGEST MANUFACTURERS OF AXLES FOR TRUCKS, BUSES AND TRAILERS



Choose from 2 types of tandem drive rear axle units for "Million Mile" performance

1. Top-mounted hypoid-helical double-reduction final drive. First reduction is hypoid gear and pinion—second is helical spur-gearing. Hypoid gearing, developed for heavy-duty trucks by Timken-Detroit, assures outstanding performance and low maintenance costs for operators everywhere. Large pinions, greater tooth contact give TDA hypoid-helical gearing the ability to stand the "gaff" of extreme shock loads and hard, grueling hauling service.

2. Famous *patented* FJ worm gearing, pioneered by Timken-Detroit. "Through Drive" type . . . direct transmittal of engine torque through forward driving axle to rear driving axle. Permanently silent . . . simple, sturdy . . . stands extreme shock-loads without damage. Large diameter worm and worm wheel . . . increased capacity roller bearings . . . easy lubrication . . . light weight make FJ highly desirable for high speed service on any kind of grades.

Plants at: Detroit, Michigan
Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

Typical Dorrco FluoSolids System utilizing single-compartment Reactor for critical temperature drying.

Strictly NOT for easy drying problems!

FluoSolids*

designed for the job where exact temperature control is essential to eliminate or induce chemical or physical raw material change.

If you merely want to remove free moisture and don't need close temperature control — read no further. But if temperature variations in your drying operation are important — if you have to avoid chemical or physical changes in your raw material like poison — or even if you have to induce them — FluoSolids may be your answer.

Why FluoSolids? Well, mostly because it involves techniques that are radically different from conventional drying methods. More specifically, because it lets you control temperature precisely and automatically (within 10 to 20 degrees). You'll get completely uniform temperature throughout the entire fluidized bed without hot spots — and that means product uniformity. Oil, Gas or Coal can be used as fuel.

There are other advantages too. You can cut fuel requirements by the use of a multiple compartment FS Reactor — which puts otherwise wasted heat to work. You'll find operating costs low because of complete yet simple instrumentation. And maintenance costs are surprisingly low because no moving parts are required in the Reactor itself.

Important point is though, FluoSolids is the best answer yet to the critical temperature drying job. And from the capacity standpoint, single units can handle from 10 to 500 tons per day depending upon individual job requirements.

We'd like to send you more detailed information. No obligation of course. The Dorr Co., Stamford, Conn.

*Reg. U. S. Pat. Off.

Better tools TODAY to meet tomorrow's demand

DORR

FIFTY YEARS 1904–1954

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

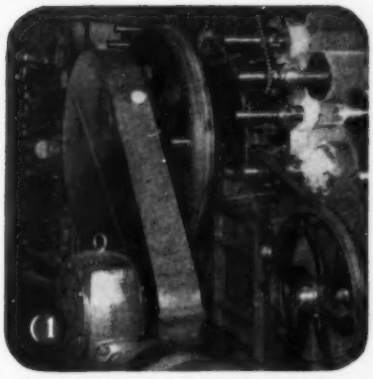
THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.

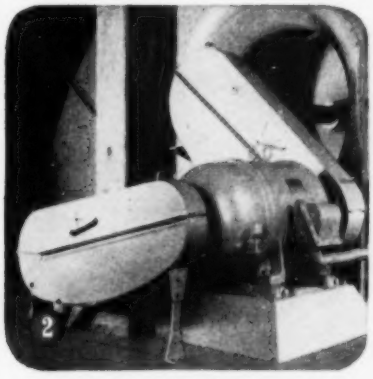
If you need a drive for jobs like these--

YOU'RE MONEY AHEAD

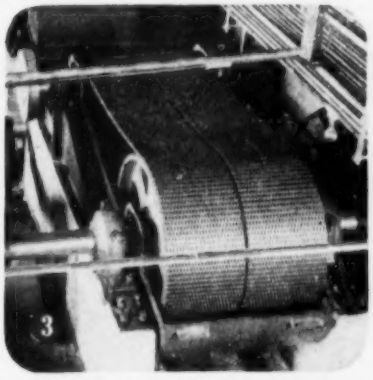
with LINK-BELT Silent Chain



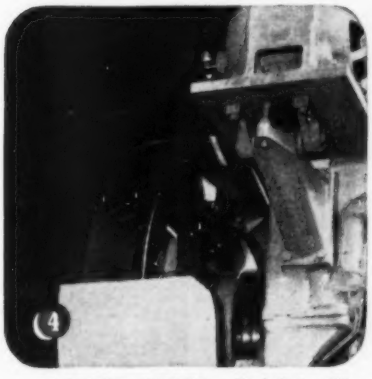
1 ADVERSE OPERATING CONDITIONS. Humidity, heat, cold do not lower Link-Belt Silent Chain's better-than-98% efficiency.



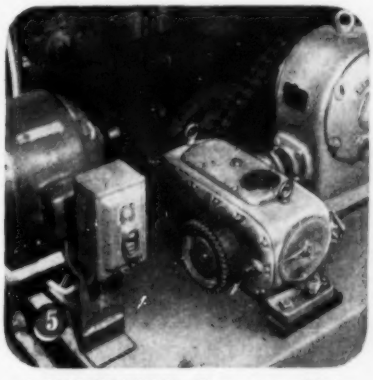
2 UNFAILING SAFETY. Dependability assures continued production. On above tunnel ventilators, Link-Belt drives protect human life.



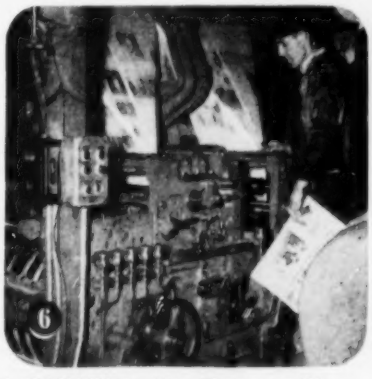
3 LARGE OR SMALL HP. A versatile line, Link-Belt Silent Chain drives are available from fractional to thousands of horsepower.



4 LARGE RATIOS. Link-Belt Silent Chain operates efficiently on extremely short centers at ratios as high as 10-to-1.



5 LIMITED SPACE. Easy to assemble in close quarters, Link-Belt Silent Chain permits built-in drives, compact housings.



6 HIGH SPEED. After 13 years on this newspaper press at speeds up to 4700 fpm, Silent Chain is still efficient.

Here's why Link-Belt Silent Chain Drives offer you more per dollar spent:

- Lower cost—often lower in first cost, always lower in ultimate cost.
- Longer life—trouble-free performance for 25 or 30 years is common.
- No dismantling machine or removing sheaves for repairs.
- Better than 98% efficiency.
- Maintained ratio assures full productive capacity.
- Slipless action assures a better product.
- Easy to install.
- Safe to employees—operates in oil-retaining casing.

For all the facts, see your Link-Belt distributor or factory branch store, or write for new Book 2425.

13.440

LINK-BELT

SILVERSTREAK SILENT CHAIN DRIVES

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

How to Move MORE

New . . . New . . . New . . . New . . . New . . . New

with a **MICHIGAN*...**

in 3/4 yard bites!

CLARK EQUIPMENT COMPANY
presents the

MICHIGAN Series "24"

Model T-24 Truck, 6 x 4 and 6 x 6; Model C-24 Crawler Shovel, Clamshell, Crane, Dragline, Hoe

14 Reasons Why — the MICHIGAN Series "24" Is Your Best Buy in '54

Full Vision Cab—new, stylized; all-around and overhead vision—3604 sq. in. glass; comfortable, quiet

Air Controls—clutches actuated by famous MICHIGAN* Air Controls

Power Clutches—single plate, double-disc, multiple-segment—air operated

Primary Drive—power transmitted through two sets spiral bevel gears running in oil

Shafts and Drums—hoist and crowd drums ball bearing-mounted on splined alloy steel anti-friction bearing-mounted shafts

Swing Brake — air operated; standard equipment

Circle Gear Casting—large diameter double-flange one-piece steel casting

Hook Rollers—six 7½" diameter, tapered, adjustable; ball-bearing mounted

Cast Turntable — machinery deck with boom hinge pin bracket and hook roller brackets—single steel casting

Big Brakes—powerful hoist and crowd brakes, 30" diameter

Worm Gear Boom Hoist—independent high speed hoist with automatic safety brake—standard

Removable Counterweight — power-handled for easy, quick removal or assembly

Truck Chassis—heavy duty: big engine, transmission, axles; deep section alloy steel frame, cross-braced, welded; rear and center outriggers standard

Crawler Base—one-piece cast steel carbody and circle gear; spring loaded safety brakes; 24" tracks standard

You'll find the MICHIGAN Fact-Folio handy and helpful; contains full specifications, an interesting book "Get More Yardage Through Air Power," and numerous action photos. The coupon will bring yours promptly.

*A Trademark of Clark Equipment Company

CLARK EQUIPMENT **Construction Machinery Division**

CLARK EQUIPMENT COMPANY
Construction Machinery Division
430 Second Street, Benton Harbor, Michigan

Please send the MICHIGAN "24" Fact-Folio

Name _____ Title _____

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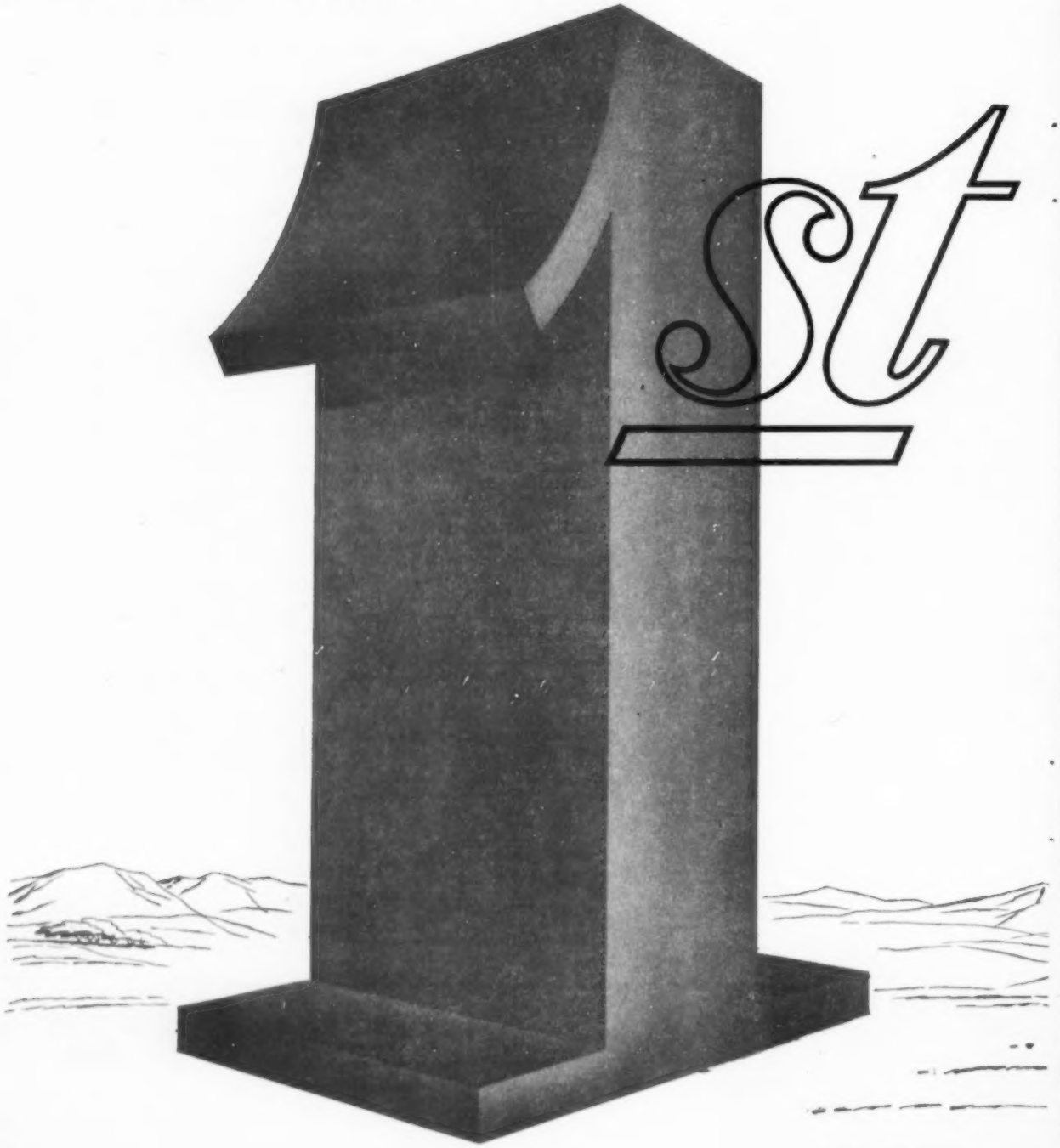
...New...New

AGAIN...
IT'S MACK



Complete figures for 1953, compiled by the Automobile Manufacturers Association, show that Mack leads all other manufacturers in sales of diesel-powered trucks and tractors.

There must be reasons—and there are! *Unparalleled fuel economy and reliability* of the Mack Thermodyne® Diesel engine—as revealed by the truly amazing in-service records attested to by important operators all over the country . . . Plus acceptance of the Mack line of heavy-duty trucks, the *only completely new line of trucks* introduced since World War II.

That's why, more and more, the swing is to Mack diesels—for the big savings they give in more miles per gallon, less down-time and stand-out performance.

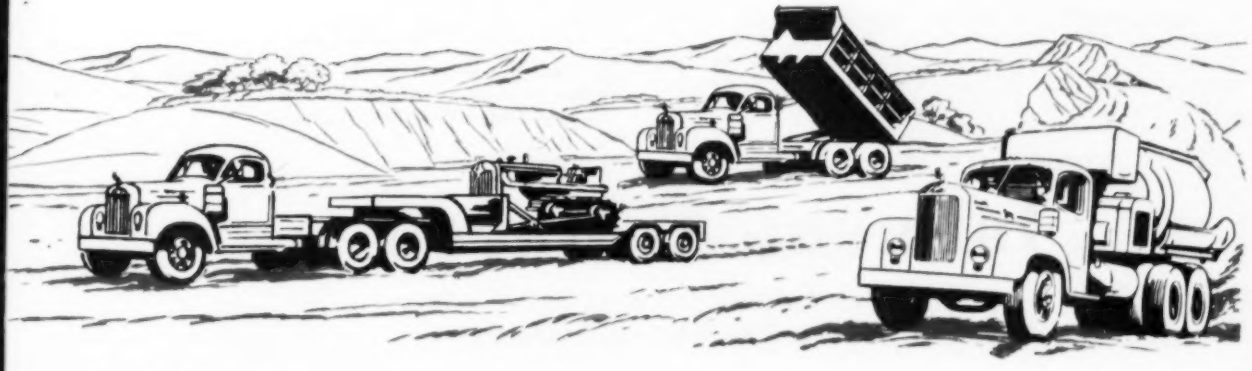
Let us refer you to users of the Mack Thermodyne Diesel whose operating conditions are similar to your own.

IN DIESEL TRUCK SALES

Mack TRUCKS

what Mack Diesels are doing for other operators...large and small...they can do for you

Mack Trucks, Empire State Building, New York 1, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.



*

...is a Johnson-March Engineered Dust Control System!

Wherever dust becomes airborne in a rock crushing plant it causes accident and health hazards, equipment damage and a serious plant and community nuisance.

That's why Johnson-March engineered systems are designed to stop dust at the source . . . at primary and secondary crushers, conveyors, elevators, screens, loading and unloading bins and wherever dust occurs . . . before it becomes airborne.

No ducts, fans or other cumbersome equipment. Easy to install, and economical to operate. Cost averages only 1/10 that of other dust handling systems.

Johnson-March engineers will be glad to analyze your dust problems and recommend a system engineered to your specific requirements.

If you have a stack dust problem, write for information about the Liquid Precipitator "Multiple-Action" Scrubber—the most efficient unit yet developed for removing dust from stack discharged gases.

*Actual unretouched photos taken before and after installation of a Johnson-March system at a large Eastern Rock Crushing Plant.

Johnson March

Dust Control Engineering

DEPT. PQ, 1724 CHESTNUT STREET, PHILADELPHIA 3, PA.

Shaves time from every working cycle

Le Roi Transo TLF-150 Front-end Loader

YOU move more material—faster—at lower cost — with this Le Roi Transo 1½-yard Front-End Loader. It saves you money every minute it's working — and here's why:

You load faster — because . . .
Patented "bucket-rocking action" helps you get a full bucket load within seconds, without tire-spin or undue strain on the loader.

You travel faster — because . . .
Four-wheel drive and low center of gravity provide powerful traction. Torque converter transmits power fast and efficiently. You get in and out in a hurry — in sand, mud, snow, or rocky terrain. Planetary-type reversing transmission cuts reversing time 95%.

You can maneuver the TLF-150 easier and in less space, thanks to power steering, short (84") wheelbase, short over-all length, and small turning radius. Low carrying position of bucket gives operator especially good vision and provides an extra margin of safety.

You dump faster — because . . .
14-foot maximum dumping height and 3-foot reach let you spot loads quickly with pin-point accuracy over high truck tail-gates, bins, hoppers.

Now, don't just take our word for all this. See a Le Roi Transo TLF-150 in action, see how it makes shorter work of your material-handling jobs—how it cuts time and costs. Have your nearby Le Roi distributor arrange a demonstration.

Write for latest bulletin.

TD-12

TRANSO DIVISION LE ROI

LE ROI COMPANY

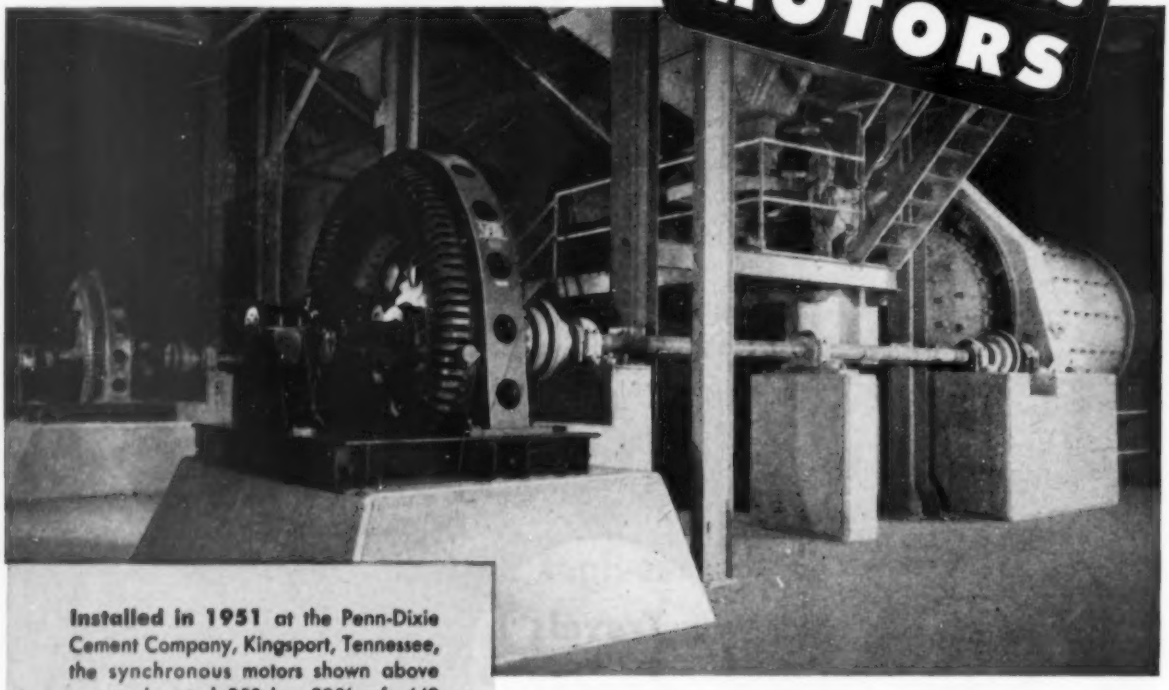
A Subsidiary of Westinghouse Air Brake Co.
TRANSO DIVISION
MILWAUKEE 14, WISCONSIN

Plants: Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan

Built for a Long Grind

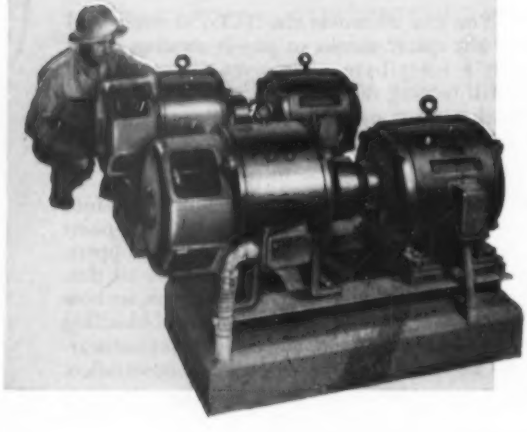
ALLIS-CHALMERS

Synchronous MOTORS



Installed in 1951 at the Penn-Dixie Cement Company, Kingsport, Tennessee, the synchronous motors shown above are each rated 350 hp, 80% pf, 440 volts, 180 rpm.

The 8 by 12-ft ball mill preliminators were furnished by Allis-Chalmers, along with the 15-kw m-g sets (shown below) which supply the excitation for the grinding mill motors.



Here are three reasons why Allis-Chalmers grinding mill motors help keep your mills grinding economically year after year:

Each motor is engineered for its job. A-C's half century of experience building electrical equipment *and* processing machinery assures torque and other operating characteristics tailored to the individual installation requirements.

Time-proved basic design features contribute to long life and trouble-free operation. These are described in detail in Bulletin 05B7648.

Adequate manufacturing, inspection and testing facilities insure that each motor will be built exactly as specified.

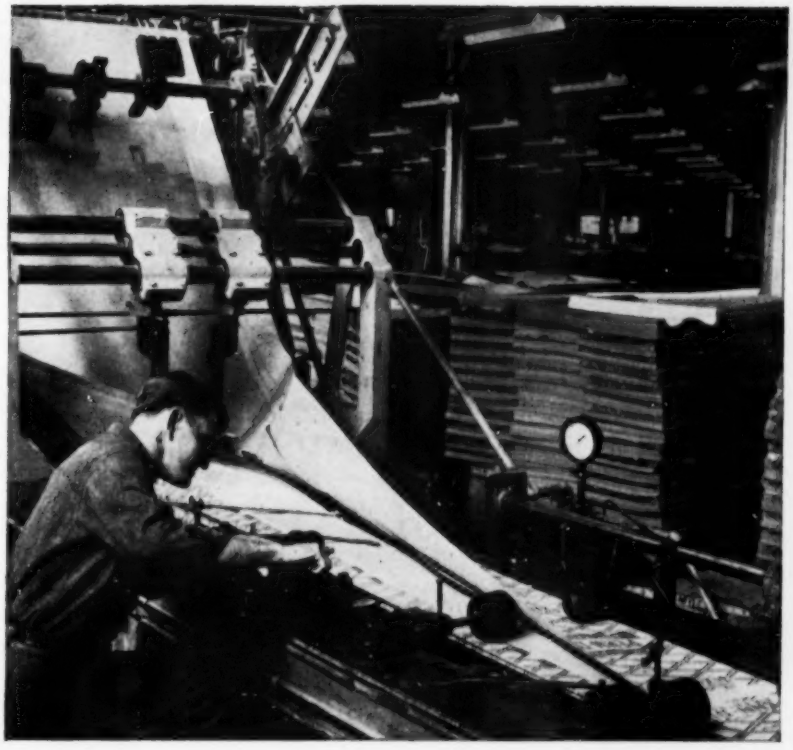
For more information on motors that minimize maintenance and down time, call in your A-C representative, or write for illustrated Bulletin 05B7648. Allis-Chalmers, Milwaukee 1, Wisconsin. A-4088

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

No. 4 of a series

How Bemis makes GOOD multiwall bags for you



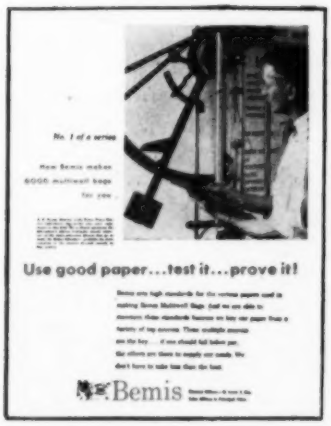
Herman Johnson, who is in charge of this big tuber at the Bemis Multiwall Plant in Peoria, joined Bemis in the tubing department nine years ago and worked up to his present capacity. His job is one of the most important in a multiwall plant.

Experienced Hands Run Our Tubers!

Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

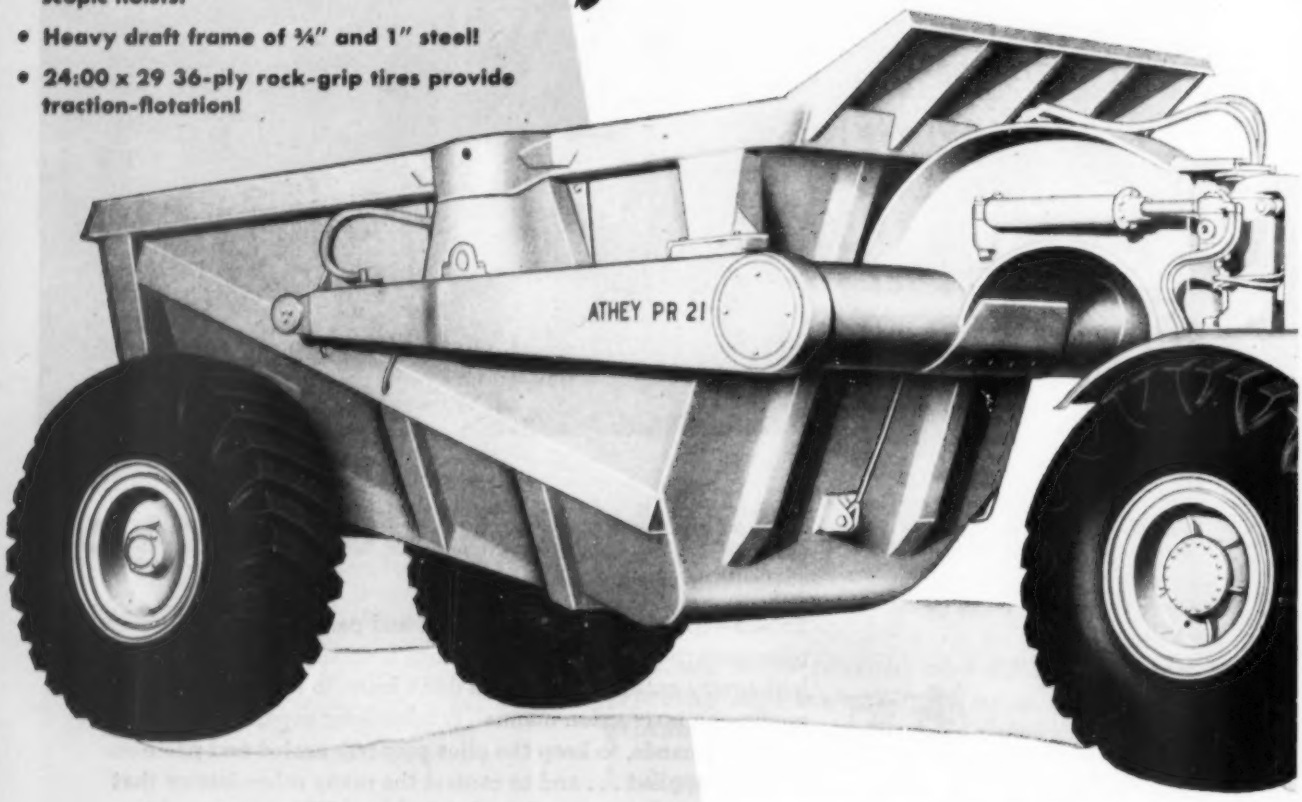
Tubers—the big machines that fold and paste the multiple kraft plies—are the heart of multiwall bag making. Running, they look pretty automatic. But you don't learn to run a tuber by reading an instruction manual. It takes long experience, knowing eyes, deft hands, to keep the plies properly nested and paste properly applied . . . and to control the many other factors that affect the performance of the finished bag. We've been making multiwalls for twenty-seven years . . . so there's plenty of bag-making experience in our twelve multiwall plants strategically located coast to coast.



No. 3 of a series
How Bemis makes GOOD multiwall bags for you
Good bag printing requires three things . . . and Bemis has one!
Bemis

Presenting

- **All controls in easy reach!**
- **Powered by 275 HP (ASME peak rating) Cat Diesel!**
- **Anything that goes in will come out!**
- **Low height, wide body for fast loading!**
- **Hydraulic steering retains feel-of-the-road!**
- **Operated by powerful Athey 3-stage telescopic hoists!**
- **Heavy draft frame of ¾" and 1" steel!**
- **24:00 x 29 36-ply rock-grip tires provide traction-flotation!**



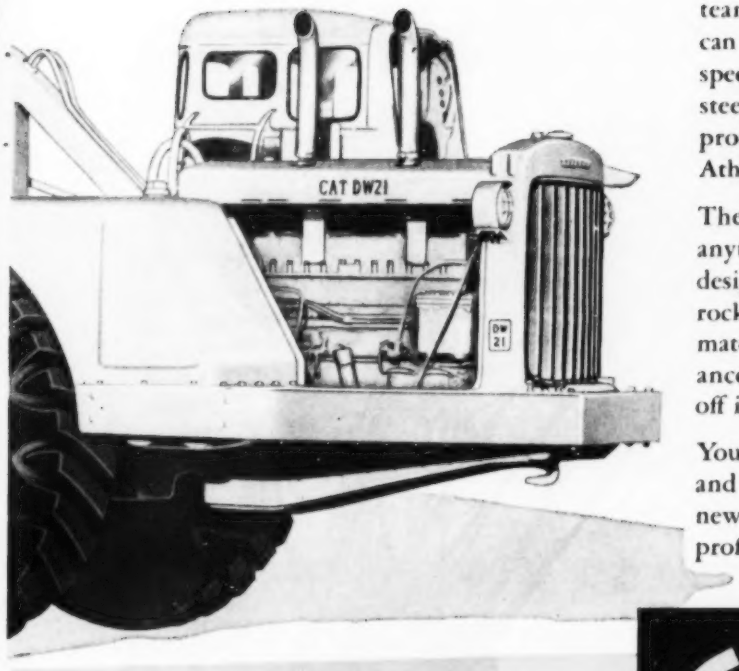
LOADING . . . *Wide-mouthed body (14' x 10') makes an easy target for fast-swinging shovels. Bottom is a sandwich—¾" high-strength steel top plate, oak-plank filler, ½" bottom plate. Heavy side sheets are reinforced with box-sections.*

HAULING . . . *Hauls are made at speeds up to 20 MPH. Low center of gravity and wide tread (123") provide exceptional stability at high speeds. Positive, hydraulic steering control keeps the operator in command of the unit. Body design allows capacity load without spillage.*

the *NEW* ATHEY PR21

REAR-DUMP TRAILER

The rock-hauling companion for the **CAT** *DW21 Tractor!*



The high-speed Cat DW21 has a new production teammate—a hydraulically-controlled trailer that can take on a heaped load of hard rock, haul at speeds up to 20 MPH, and dump the load over steep banks in complete safety. The new high-production, high-profit, rear-dump hauler is the Athey PR21 Trailer.

The PR21 is built of high-strength steels to take anything rock can dish out. All-welded, frameless design reduces and absorbs the twist and torque of rock loading, hauling and dumping. The PR21 matches its DW21 teammate in capacity, performance and dependability—a combination that pays off in production and profits.

Your Athey-Caterpillar Dealer has complete specs and performance data. See for yourself why the new PR21 assures trouble-free work schedules and profitable production. Call on him or write direct to

Athey **PRODUCTS CORPORATION**
5631 West 65th Street
Chicago 38, Illinois

DUMPING . . . *Body tilts, under hydraulic control, 60° to dump any load cleanly. Individual 22" x 7" tractor and trailer brakes provide extra margin of safety. 90° turns eliminate lengthy maneuvers on the fill, permit turns in 34 feet!*

ATHEY—*Pioneers and Specialists in the Trailer Field!*

DEPT. PQ-44

Athey Products Corporation
5631 West 65th Street
Chicago 38, Illinois

Please rush specs and literature on the new high-production PR21 Rear-Dump Trailer.

☐ Have my dealer's representative call on me with information.

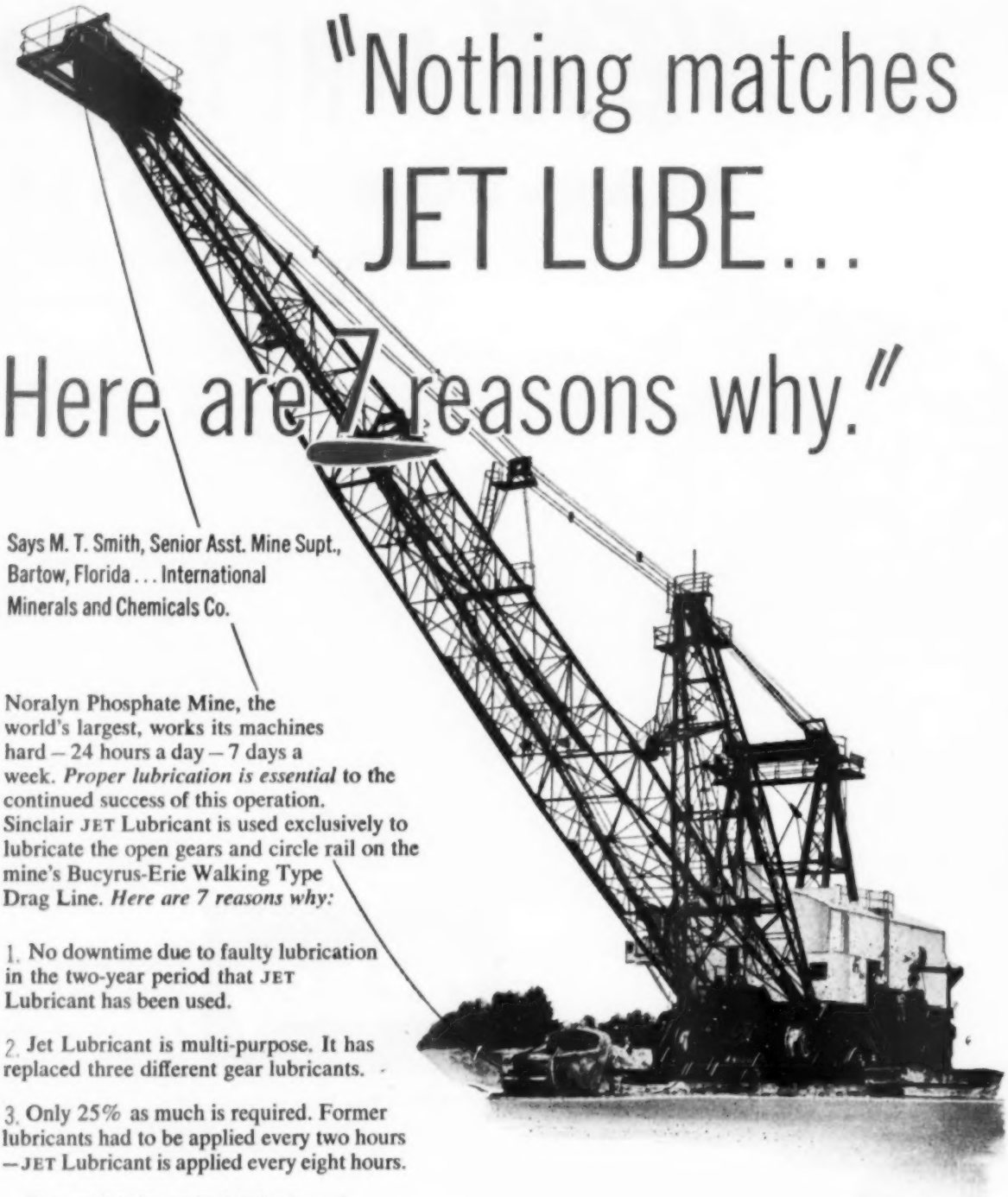
Name_____

Company_____

Address_____

City_____ State_____

"Nothing matches JET LUBE... Here are 7 reasons why."



Says M. T. Smith, Senior Asst. Mine Supt., Bartow, Florida... International Minerals and Chemicals Co.

Noralyn Phosphate Mine, the world's largest, works its machines hard – 24 hours a day – 7 days a week. *Proper lubrication is essential* to the continued success of this operation. Sinclair JET Lubricant is used exclusively to lubricate the open gears and circle rail on the mine's Bucyrus-Erie Walking Type Drag Line. *Here are 7 reasons why:*

1. No downtime due to faulty lubrication in the two-year period that JET Lubricant has been used.

2. Jet Lubricant is multi-purpose. It has replaced three different gear lubricants.

3. Only 25% as much is required. Former lubricants had to be applied every two hours – JET Lubricant is applied every eight hours.

4. Former lubricants had to be heated – JET Lubricant does not.

5. JET Lubricant doesn't harden – former lubricants had to be scraped off during shutdowns.

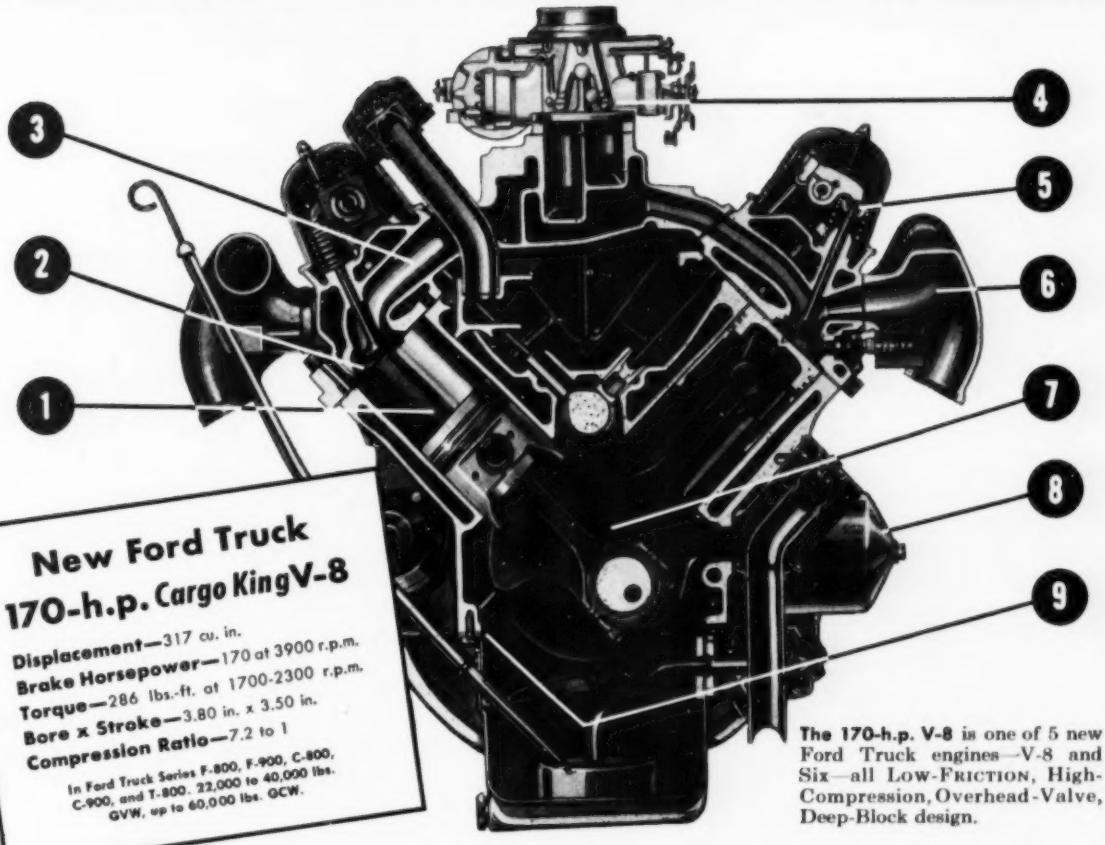
6. JET Lubricant reduces inventory.

7. JET Lubricant eliminates any chance of misapplication.

● There are *more* reasons why the right grade of JET Lubricant and other Sinclair products can improve your operations. Why not phone or write the nearest Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

SINCLAIR LUBRICANTS

ANOTHER WAY YOU SAVE WITH FORD *TRIPLE ECONOMY*



The 170-h.p. V-8 is one of 5 new Ford Truck engines—V-8 and Six—all LOW-FRICTION, High-Compression, Overhead-Valve, Deep-Block design.

Up to 41% more power per cubic inch

—than other truck engines in its class!

Here's why the Cargo King V-8 gives you power with economy...the No. 1 saving in Ford Triple Economy!

1. Short-Stroke power—In the new *Cargo King* V-8, short-stroke design reduces piston travel as much as 34%. This cuts wear, repair costs, and internal friction losses . . . releases more "useful" power, saves gas. Cylinder and combustion chamber design permits larger intake and exhaust valves for more efficient fuel use, less dissipation of heat to cooling system. More energy per pound of fuel is converted into *usable*, load-moving power.

2. High-Turbulence combustion chambers are wedge-shaped to create high turbulence, give more efficient fuel-air combustion without pre-ignition.

3. Short-Reach intake manifold is two manifolds in one single casting. Carburetor mounted directly to manifold allows short passages, delivers uniform fuel charge to all cylinders for greatest power, easy starting.

4. Exclusive de-popper valve on dual concentric carburetor eliminates backfiring when decelerating.

5. Free-turn valves rotate freely for self-cleaning action, better seating, minimize valve warpage, wear and sticking.

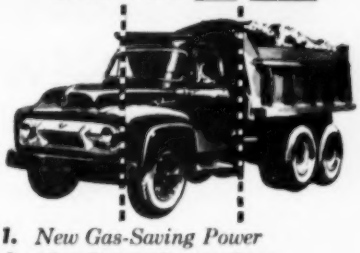
6. Ram's Horn exhaust manifold improves breathing efficiency of new *Cargo King* by scavenging exhaust gases faster.

7. Precision-molded alloy iron crankshaft is a Ford exclusive. Permits more rigidity in design, with three times better self-damping.

8. Full-Flow oil filter cleans *all* oil before it reaches bearing surfaces, reduces cylinder wall, piston ring and bearing wear. Replaceable cartridge type.

9. Deep-skirt crankcase extends 2¾" below center of crankshaft for greater rigidity to resist distortion, provides maintenance of bearing alignment for long life and smooth engine performance.

SAVE WITH ALL THREE



1. *New Gas-Saving Power*
2. *New Driver-Saving Ease*
3. *New Money-Saving Capacities*

FORD *TRIPLE ECONOMY* **TRUCKS**

MORE TRUCK FOR YOUR MONEY!

For complete information, see your Ford Dealer, today, or write: FORD Division, FORD MOTOR CO., Dept. T-12, Box 658, Dearborn, Michigan.

SUPERIOR Gyratory CRUSHERS

29 in 3 YEARS!

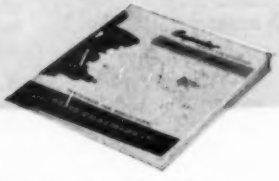
SUPERIOR primary and secondary gyratory crushers have been making a big name for themselves since they were introduced three years ago. Twenty-six are installed and operating... three are under construction now, including a huge 60 x 109 machine — largest crusher the world has ever known.

A policy of simplifying design and controlling quality has made Allis-Chalmers the leading builder of crushers. A continuing policy of *improving* crusher design has greatly extended this leadership.

This vast backlog of crusher application experience — over 75 years of it — is always available to you when you want to make sure of a successful installation. Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4319

Superior is an Allis-Chalmers trademark.



NEW 32-Page Book Contains Helpful Crushing Data

- Packed with factual "how to" information on figuring hp requirements, impact and compressive strengths.
- Step-by-step procedures for estimating gyratory crusher sizes, capacities. Examples are worked out.
- Many other valuable facts on gyratory crusher operation . . . application . . . engineering.

It's a book you'll want to have and keep!

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.

Note excellent flexibility of U.S. Royal Shielded Cables.

There's plenty of "drag miles" in U. S. ROYAL SHIELDED TRAILING CABLES

The constant dragging, flexing, twisting and bruising encountered in heavy service do not bother U.S. Royal Shielded Cables. The rugged jacket contains 60% by weight of neoprene; this jacket is cured in lead – all for more durability, more "drag miles". Consider also more than just the initial cost! Achieve a new low in your cable replacement costs – a new high in performance by specifying U. S. Royal Shielded Trailing Cable, the cable that can take a beating and come back for more.

Here's the key to U. S. Royal's great performance; United States Rubber Company is the only electrical wire and cable manufacturer to grow its own natural rubber, manufacture its own synthetic rubber and its own plastics. This means *control of production* every step of the way – resulting in a better and more efficient product.

FREE BOOKLET

Write to address below for free catalog, "U. S. Electrical Wires and Cables," describing the complete line.

UNITED STATES RUBBER COMPANY

Electrical Wire and Cable Department • Rockefeller Center, New York 20, N. Y.

SINCE 1856
HUMBOLDT
Mines Equipment, Mineral Dressing Plants, Crushing and Grinding Machinery, Cement Factories, Metallurgical Works, Coal Preparation Plants, Steel Constructions for Buildings and Bridges.
SINCE 1864
DEUTZ
Otto-, Gas-, Diesel-Engines for Every Purpose of Two- and Four-Stroke design, Output range 3-1650 H.P. Cooled by water or air, Diesel-powered tractors, Diesel locomotives, Gas producer plants.
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MAGIRUS
Trucks and busses driven by air-cooled DEUTZ Diesel engines, Vehicles for municipal services, Fire ladders, fire engines, Fire fighting water trucks, Two-wheeled ladders, Fire fighting equipment.
KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN

KLOCKNER-HUMBOLDT-DEUTZ A.G. KÖLN-DEUTZ, GERMANY

ROCK RATED

to better your best production!

Pit a P&H 1055 against any comparable 3½ yd. machine and see how P&H takes over the production lead. And it *maintains* the pace day after day, under the toughest digging and loading conditions!

P&H years-ahead design and construction make the big difference. You get the extra strength of high-tensile alloy steels to withstand the pounding of repeated shock loads . . . the solid stability that lets you exert more power at tooth point. And only P&H has *Magnetorque* to swing you through five loads to the other man's four. It's the most dependable swing ever built — lasts the life of the machine!

Want the same outstanding features in a 2½ yd. machine? Ask us about the companion Model 955A.

with P&H *MAGNETORQUE** ELECTRIC SWING

- **15-25%** *faster* . . . . . .
- **100%** *free of friction and wear!*

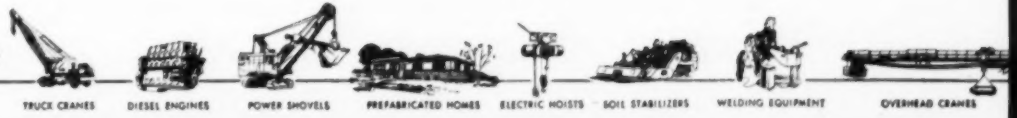
*T.M. of Harnischfeger Corporation for electro-magnetic type coupling.

P&H LARGE EXCAVATOR DIVISION

HARNISCHFEGER CORPORATION

MILWAUKEE 46, WISCONSIN

the P&H *Line*



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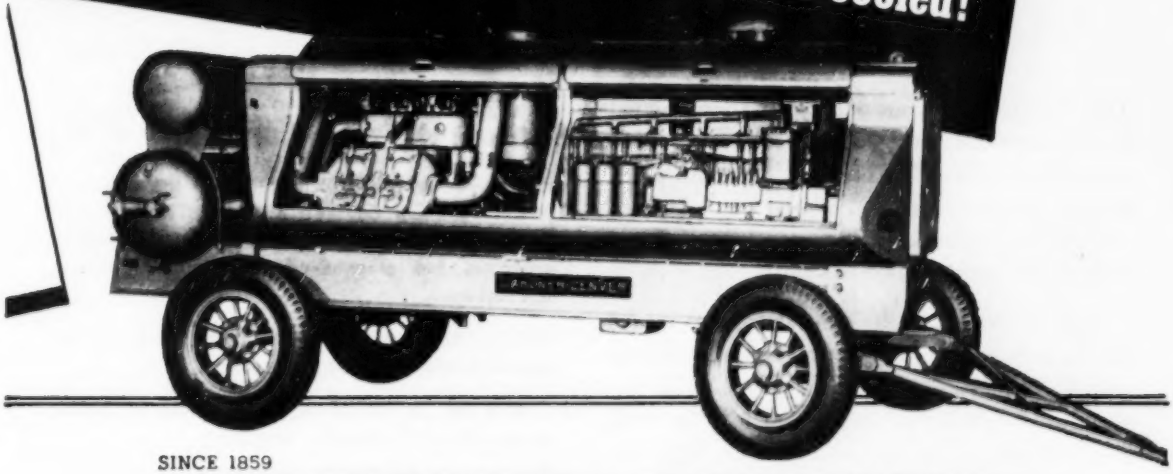
before
YOU
buy
any 600-ft. portable . . .
ask these questions:
Is it easy to start?
Is it simple to operate?
Will it operate from the EQUATOR to the POLE?
Does it save fuel and oil?
Will it put in 24 hours every day?
Will it run 6,000 PLUS hours before overhaul?

Send for Gardner-Denver Bulletin PC-12 *before* you buy.

All over the Globe...
with a
GARDNER-DENVER
"600"
the answer is...
YES!
Because it's two-stage and fully water-cooled!



SINCE 1859

GARDNER-DENVER

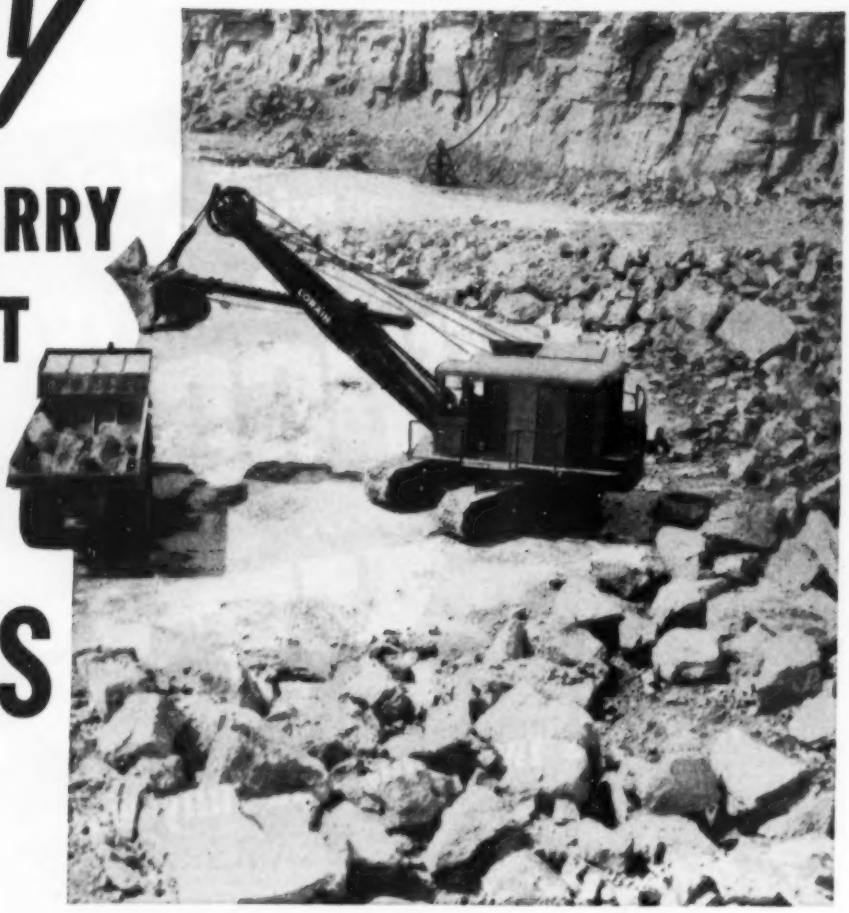
WB COMPRESSORS | GROUT PUMPS | AIR MOTORS | COMPRESSOR OUTFITS | TRAILER COMPRESSORS | CENTRIFUGAL PUMPS | RX COMPRESSORS | HA COMPRESSORS

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS
FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd. 14 Curity Avenue, Toronto 16, Ontario

WHY THIS QUARRY BOUGHT 15 LORAINS

• This 2-yd. Lorain shovel, model 820-K, is the 15th Lorain purchased by a large quarry with operations in Ohio. It is shown loading dolomite, working a 35 ft. face.



This Ohio quarry is one of five operations owned by the same company. In each of the five quarries, Lorain shovels are at work. Over the years, this owner has purchased a total of 15 Lorains . . . each the result of the outstanding performance of the previous Lorains.

In the photo, a new 2-yd. Lorain shovel, model 820-K, is shown loading dolomite. It's tough digging and steady work against a 35 ft. face. According to this owner, the new "820" is a big step forward in shovel performance. The Hydraulic (fluid drive) Coupling makes shovel digging smooth and shock-free. Air-controlled steering and tread lock, plus air-assist on friction clutches make operation easier and speed-up the shovel's loading cycle.

TAKE THE SHOCK OUT OF ROCK WITH

Extra Values that Pay Profits in the 2-yd. LORAIN 820

- Hydraulic Coupling (fluid drive) is the standard Power Take-Off on the "820". No shock — improves engine "hang-on", no-engine stall, reduces vibration. No other 2-yd. class machine offers this feature.
- Air controls contribute to better performance, greater production, easier operation.
- Choice of 5 interchangeable booms — shovel, crane, clamshell, dragline and hoe.
- See your nearby Thew-Lorain Distributor about the Lorain-820 . . . and the rest of the Lorain line.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN® 820 SERIES

dig this powerful ditcher

PHOTO COURTESY BARBER-GREENE COMPANY, AURORA, ILLINOIS

Chrysler *power and gýrol Fluid Coupling team up to put the "run" in runabout.*

When the operator of this ditcher "lowers the boom" things happen fast. That's because the vertical boom concentrates the weight of the unit on the work, bringing additional pressure to bear on digging buckets. This, in turn, allows them to bite into practically any kind of ground formation, frozen soil or even bituminous pavement. Upon completion of digging, a simply-operated hydraulic control raises the boom and the unit takes off—automotive style—down the highway to the next job.

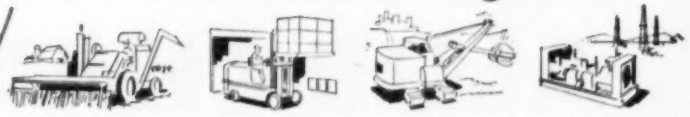
Behind the power and dexterity of the Barber-Greene Runabout is the Model 8 Chrysler Industrial Engine and Chrysler gýrol Fluid Coupling. This 250 cubic inch displacement engine with its wide speed range drives the bucket line, crowds the ditcher along the trench, supplies power to the hydraulic boom hoist and takes the ditcher to the next job at traffic speeds. Chrysler gýrol Fluid Coupling helps the operator coordinate crowding and bucket line speeds for maximum digging efficiency.

If your equipment requires power within our 217 to 413 cubic inch displacement range, engines that will operate equally well with gasoline, natural or L-P gas fuels, engines ideally suited to power take-off, then see a Chrysler Industrial Engine Dealer. He can supply *engines equipped at the factory for their jobs in the field.*

Remember too that Chrysler Power is not expensive. Production-line methods adapted to specialized industrial engine building provide a custom-built engine at mass-production prices. If you prefer, write: ***Dept. 134, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.***

CHRYSLER *Industrial Engines*

HORSEPOWER WITH A PEDIGREE



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READILY ACCESSIBLE FOR SERVICE

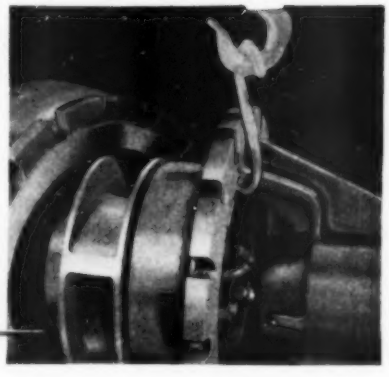
- ALL MAINTENANCE POINTS ARE EASY TO REACH.
- CAN BE TAKEN DOWN AND RETURNED TO SERVICE IN LESS THAN A HALF HOUR.
- MANY PARTS INTERCHANGEABLE BETWEEN DIFFERENT PUMP SIZES.

ALLIS-CHALMERS
Solids Handling PUMP

Here's How Easy Service Is

Disconnect drive, loosen casing bolts and lift bolt assembly from slots. Bolt, nut and washers are still connected for easy reassembly.

Swing out rotating element. Neither suction or discharge piping is disturbed. All wearing parts are fully accessible for inspection or service.



FOR HELP ON YOUR SOLIDS HANDLING PROBLEMS, call your nearest Allis-Chalmers District Office. For more information, write Allis-Chalmers, Milwaukee 1, Wisconsin for Bulletin 52B6381.

ALLIS-CHALMERS

A-4225

A SOLID BASIS for Sustained High Output

Bucyrus-Erie Individual Design Matches Strength to Capacity

Plenty of strength, stability, and power for sustained high output is an important result of Individual Design. Every model in the Bucyrus-Erie line is designed and built from the ground up for its particular work range. That's why each model does such an outstanding output job in its class.

Look at the 38-B pictured here. It's a 1½-cubic yard shovel all the way through. Front end, main machinery, power unit, and mounting are all perfectly matched to dipper capacity. That's why the 38-B handles its big loads with outstanding efficiency no matter what the material — rock, shale, dirt, gravel, or sand.

If your quarry or pit calls for shovels, draglines or clamshell-cranes with gasoline, diesel or single-motor electric power in the ⅜- to 4-cubic yard size range, see your Bucyrus-Erie distributor for complete details on how you can step up output with a Bucyrus-Erie — the line that features Individual Design for each model. For information on larger quarry and mine excavators, write direct. 40E53

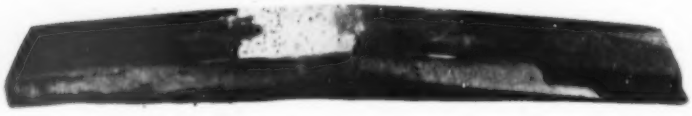
BUCYRUS ERIE

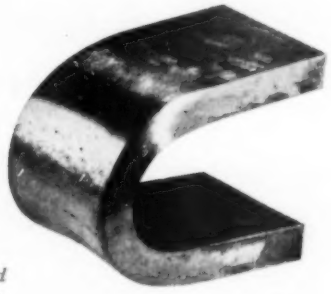
South Milwaukee, Wisconsin

WEAR-ARC "SUPER WH" FOR MANGANESE

WEAR-ARC "Super WH"—the new electrode that combines strength, ductility, impact and abrasion resistance . . .

As a result of more than two years of research development and field tests, the Alloy Rods Company proudly announces Wear-Arc "Super WH" as a truly revolutionary electrode with superior strength and wear properties. The core wire, which is melted especially to Alloy Rods Company specifications, contains approximately 33% alloy . . . balanced in proportions never before conceived in a hard facing electrode. This entirely new alloy has a carbon content of only 0.35% but develops an equivalent hardness of alloy steels containing *three times* this carbon content. Those experienced in the hard facing field will recognize the advantage of a low carbon alloy in preventing spalling and flaking of the weld deposit under operating conditions requiring severe impact. With abrasion resistance *up to four times* over manganese steel, "Super WH", which operates on either AC or DC current, offers a new concept of values in the impact-abrasion hard facing field that will serve as a standard for the future.





(Above) Manganese steel plate welded with 14% manganese electrodes—maximum bend obtainable in free bend test.

(Right) Manganese steel plate welded with WEAR-ARC "Super WH" electrodes—after free bend test.

VISIT US AT BOOTHS 165-169

WELDING SHOW

MEMORIAL AUD.

BUFFALO—MAY 5-7

WEAR-ARC "Super WH"—the new electrode that has better physical properties than any other electrode for welding manganese steel . . .

The table shows the amazing physical properties of "Super WH" as compared to heat treated manganese steel plate and the best manganese steel electrode that was available before the development of WEAR-ARC "Super WH".

	Weld Metal "SUPER WH"	Weld Metal 14% Mang.	Plate 14% Mang.
Condition of Material Tested	As welded	As welded	Heat treated
Tensile Strength (psi)	130,000-140,000	85,000-90,000	86,000-136,000
Yield Strength (psi)	85,000-90,000	45,000-55,000	45,000-55,000
% Elongation (Free Bend)	40.0%-45.0%	8.0%-15.0%	35.0%-45.0%
Carbon Content	0.35%	0.80%	1.00%
Wear Resistance Factor*	(work hardened) 2.20 to 4.10	(work hardened) 0.86 to 0.93	(work hardened) 1.00
Rockwell C Hardness (Average)			
As Welded	23.5	19.0	16.5
Work Hardened	48.5	47.0	48.0

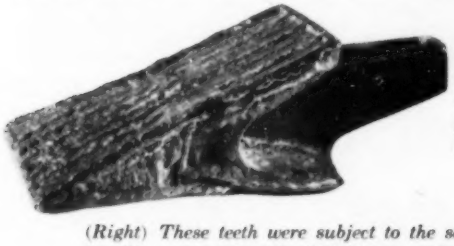
*Ability to resist wear as compared to work hardened manganese plate. Higher figures represent greater resistance to wear.

REVOLUTIONARY *new* ELECTRODE

STEEL WELDING

WEAR-ARC "Super WH"—the new electrode that is two electrodes in one for maximum weld strength and maximum wear resistance . . .

Now only one type of electrode is necessary for attachment welding and hard facing. "Super WH" eliminates the necessity of using stainless steel or other types of electrodes for strength welds and manganese steel electrodes for wear resistance. "Super WH" will join manganese to itself or to any other type of steel with greater strength and rigidity than stainless steel and at the same time outwear the weld deposit of any manganese steel electrode *four to one.* Under normal welding conditions, it is impossible to obtain cracks in the root or subsequent passes when using "Super WH". Those who have attempted to use manganese steel electrodes for welding root passes will welcome this great electrode which also outwears any work hardening electrode ever developed.



(Left) A repointer bar has been welded in place on a worn tooth and then the entire area has been resurfaced—"Super WH" electrodes were used for both operations.

(Right) These teeth were subject to the same number of hours of service in handling approximately 12,000 tons of large rock. The worn tooth on the left was welded with 14% manganese electrodes, the one on the right was welded with "Super WH" electrodes.

SPECIAL INTRODUCTORY OFFER... **Now prove the cost-saving advantages of new WEAR-ARC "Super WH"—and do it for just $5.90!**

At this sensational low price we'll send you ten pounds of "Super WH" electrodes (in any one of the three diameters) packed in a hermetically sealed metal container—and that $5.90 includes shipping charges anywhere in the United States. *But act fast*—fill in coupon below and enclose check or money order *today* . . . special introductory offer ends May 15, 1954.

See your Alloy Rods distributor for larger quantities of the new and superior Wear-Arc "Super WH".

120

Alloy Rods Co.

General Offices and Plant • York, Pennsylvania
Pacific Coast Sales Offices & Plant • El Segundo, Calif.

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no finer electrodes made...anywhere

Yes, I want to take advantage of your special introductory offer. I enclose $5.90 for a ten pound container of Wear-Arc "Super WH" in the following diameter: ☐ 5/32", ☐ 3/16", ☐ 1/4".

Name.....

Company Name.....

Address.....

City.....State.....

Stockbridge Stone Co. finds that **Extra flexibility of belt reinforced with "Cordura" permits 45° idlers . . . speeds production**

Reinforced with Du Pont "Cordura", this 527 ft. long, 30 in. wide belt operates almost constantly during an eight-hour, six-day working week. Although subject to dampness, cold and dust, it has been in service for six months with no maintenance.

To increase loading capacity . . . cut loading time . . . speed production, the Stockbridge Stone Co. of Georgia installed a main conveyor belt operating on 45° troughing idlers. Reinforcement with Du Pont Cordura* gives this belt extra strength . . . plus extreme lateral flexibility required by the unusual troughing angle. Operators of the quarry report that the belt—manufactured by Raybestos-Manhattan, Inc.—shows no sign of wear after 6 months of operation.

Belts sinewed for strength with "Cordura" trough and train better. And the extra strength and low stretch of "Cordura" means less downtime for take-ups, resplicing. Loaded or empty, these belts ride firmly on the center idler.

Find out more about the advantages of belts reinforced with Du Pont "Cordura". Write for names of suppliers, and for your copy of the free booklet: "Sinews for Industry." Address: Textile Fibers Dept., Room 2520-Q E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Delaware.

*REG. U. S. PAT. OFF.

Du Pont "Cordura" High Tenacity Rayon

STRENGTH AT LOW COST

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KUE-KEN CRUSHER

- ✓ LASTS LONGER
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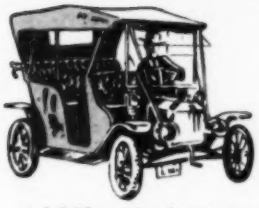
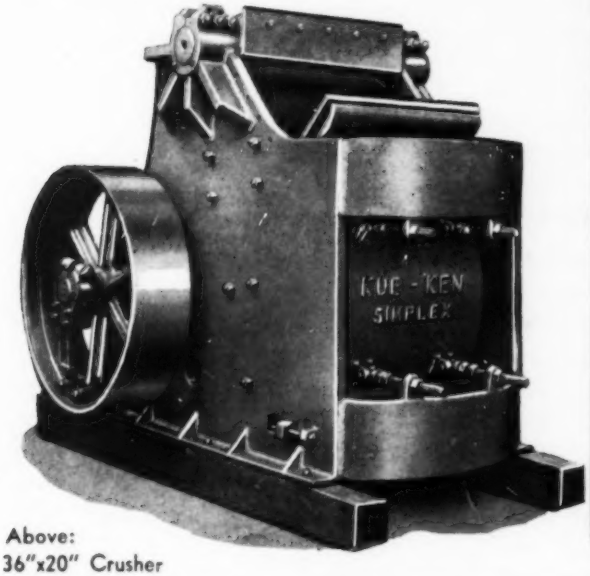
- ✓ LESS MAINTENANCE



You wouldn't drive a car that had to be oiled by a squirt can . . . then why settle for an outdated crusher that is lubricated in this manner or by similar inefficient methods? The price is worn out bearings, wasted horsepower, slow operating speeds and uneven crush.

Stop this waste . . . switch to a Kue-Ken crusher with the crankcase-type lubrication system.



Above:
36"x20" Crusher

The only crusher whose moving parts run in a bath of clean cool oil!

Cutaway view showing Kue-Ken hinge pin (above) and "crankcase" (below).

Kue-Ken Crusher is completely sealed so dust cannot enter and oil cannot escape. A direct driven gear type oil pump draws oil from the "crankcase" and pumps it through a strainer and filter to all operating mechanism. An automatic pressure switch protects the crusher from oil failure. All toggles and seats are machined to micrometer tolerances which are maintained indefinitely because of the perfect lubrication system exclusive to Kue-Ken crushers. The hinge pin and overload safety device have separate sealed oil baths.

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In this issue

Editorial—Superhighways and Prosperity 72
News of the Industry 75
Thirty Years Ago in Pit and Quarry 84
176th General Meeting of A.I.M.E. 85
38th Annual N.S.G.A. Convention Sets Several New Records 88
Screenings 104
37th N.C.S.A. Convention Sets Record in Attendance and Exhibits 110
Report on Current Labor Developments 127
N.A.L.I. Convention in Chicago Draws Record Attendance 128
Clinker Grinding in Ball Mills 135
Washington News Letter 138
Ninth Annual Convention of Iowa Agricultural Limestone Association 139
Important Standardization and Research Work Discussed at A.S.T.M. Committee Week 140

The Concrete Manufacturer

Editorial—Civil Defense Plan 169
News of the Concrete Industries 171
Convention Reports 178
Ready Mixed Concrete Association 178
American Concrete Institute 183
American Concrete Pipe Association 185
Autoclave Building Products Association 188
Compression Testing for Profit 191
Unusual Techniques Featured in Change House Built of Concrete 192

More Information Please 117
New Machinery 143
Personal Mention 146
Obituaries 147
Legal Decisions 148
Traffic News 153
Trade Notes 157
Index to Advertisers 237

PIT AND QUARRY IS INDEXED IN THE ENGINEERING INDEX

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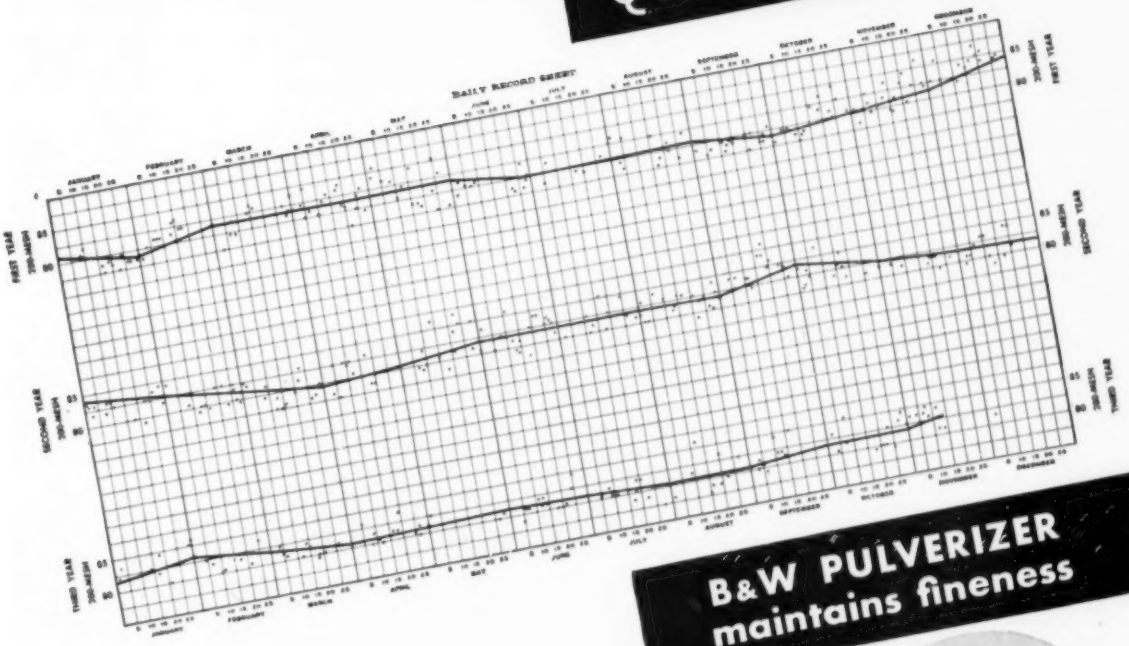


B&W PULVERIZER maintains fineness

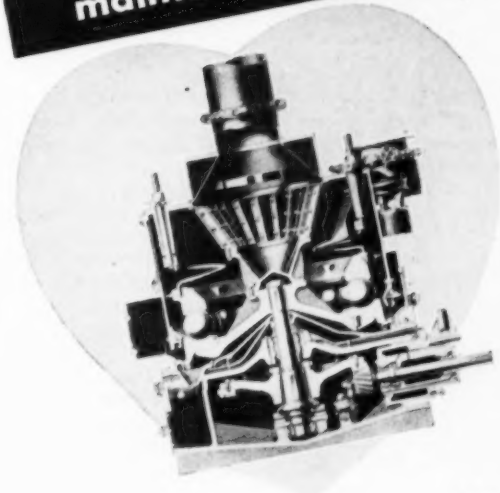


Chart shows record of a B&W Type E Pulverizer over a three-year period. The Babcock & Wilcox Company, Boiler Division, Process Equipment Department, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

C-205

editorial

Superhighways and Prosperity

AFTER many years of costly and tragic delay it appears that this country is finally on the way to getting a highway system adequate for the terrific traffic load. In nearly every area where a traffic problem exists, suitable facilities are under construction or steps are being taken in that direction. In most large cities where traffic congestion has been a serious problem, superhighways have been or are being built to carry traffic quickly and safely from the heart of the city to the outskirts. Now our number one highway problem is being solved by the rapid realization of a chain of interstate superhighways connecting these cities.

According to recent reports, the nation in 1954 will spend more than 2.5 billion dollars on 1,800 miles of superhighways. Of this total about 1,000 miles will be toll roads. Toll roads are now in operation in Pennsylvania, New Jersey, New Hampshire, Maine, Oklahoma, and Colorado. New toll highways or extensions are now under construction in Maine, New Jersey, Ohio, Pennsylvania, New York, New Hampshire, and West Virginia. New tax-financed expressways are under construction in at least eight states—Colorado, Oregon, Maryland, Michigan, California, Massachusetts, Illinois, and Washington. Other superhighways, either toll or tax-financed, are being considered in Louisiana, Florida, Rhode Island, Wisconsin, Kentucky, Nebraska, Texas, Indiana, Oklahoma, Connecticut, Iowa, Illinois, North Carolina, Missouri, Kansas, Arizona, and Georgia.

The biggest of the superhighways being built—a toll road—is the 427-mile, 500-million-dollar New York State Thruway between New York City and Buffalo by way of Albany. This, with the Ohio Turnpike now under construction, and the east-west Indiana toll road, for which most of the bonds have already been sold, will provide safe, speedy travel between Chicago and New York. Other major superhighways proposed include one from Chicago to Miami, Fla.; one from Miami up the East Coast to Maine; one from Chicago southwest into Texas; and another west from Chicago to Colorado.

THAT toll roads are a good investment if properly located and designed is proved by the Pennsylvania Turnpike and other newer toll roads. According to a report released in October, 1953, since the original section of the Pennsylvania superhighway was opened to traffic on October 1, 1940, more than 50,000,000 vehicles have used it, paying about 85 million dollars in tolls. The bumper earnings have placed the bond redemption program approximately 7 years ahead of schedule. The records of other toll roads have also proved that motorists are willing to pay premium prices to drive on premium roads.

At a recent toll-road parley in Miami which was attended by delegates from 17 states it was pointed out that "turnpike authorities" have an opportunity to provide safe, high-speed, high-traffic-capacity highways for 40,000 miles of public thoroughfares through many congested areas without adding to the tax burden. The same bottlenecks, if improved by public funds, would create about 12.5 billion dollars in additional taxes. The development of toll roads was held to be a state right rather than a federal one, but it was emphasized that interstate conferences and agreements were necessary to insure proper linking at state borders.

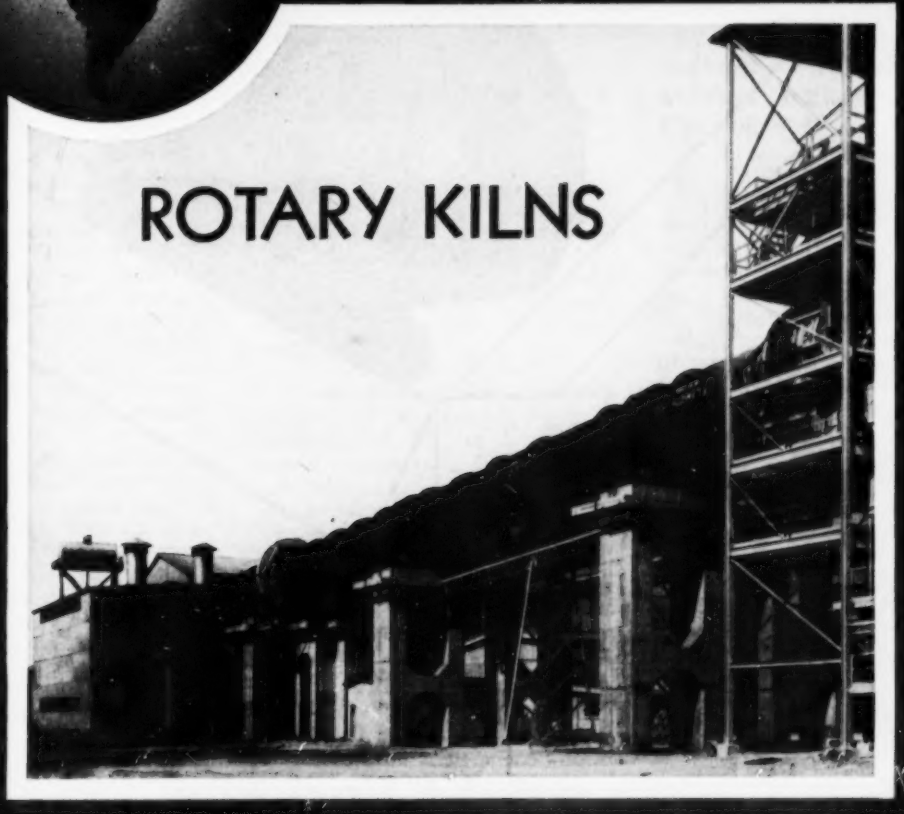
WE take no sides in the argument over which is preferable—the toll road or the tax-paid superhighway. In either case the result is the same—to make it easier, faster, and safer to go from one place to another. Expressways of either kind mean a saving of time, fuel, and wear and tear on both the car and the nervous system. Even more important is the fact that the fatality rate on good expressways is from one-third to one-half of what it is on the old, undivided highways and even this ratio can be improved. It would seem that it might be advisable to finance these roads through bond issues wherever possible, leaving both state and federal funds available for the secondary local and access highways, which are not suitable for toll financing and which are also sadly inadequate for our needs.

TO many the terms "turnpike" and "highway tolls" have sinister implications, due probably to their original meanings. Toll roads date far back in history, the earliest tolls, it is said, having been executed by robber bands which ranged the countryside near ancient Babylon. The earliest legal tolls paid the cost of professional protection against such bandits. Toll roads later became closely linked with the development of world travel and trade, the first turnpike of record having been constructed in England in 1346. The first American turnpike was built in 1785 from Alexandria, Va., through a pass in the Blue Ridge mountains. Similar toll roads then appeared in other states, and the trend reached its zenith around 1830. Within a few years after the Civil War such roads were virtually a thing of the past. It took the Pennsylvania Turnpike to reawaken national interest in the toll method of financing highway construction. It seems now that this and other toll roads have provided the impetus necessary for the solution of our highway problems.

Largely due to this rapidly expanding highway construction program, the construction volume so far this year is ahead of that for the same period in 1953. There seems to be no doubt that 1954 will be a record construction year; and, also largely due to the highway backlog, succeeding years should reach even higher levels. Highway construction seems to be another of those developments which have in this century served to stimulate employment and commerce, and which have kept our standard of living at a high level.

Walter E. Trauffer

SMIDTH



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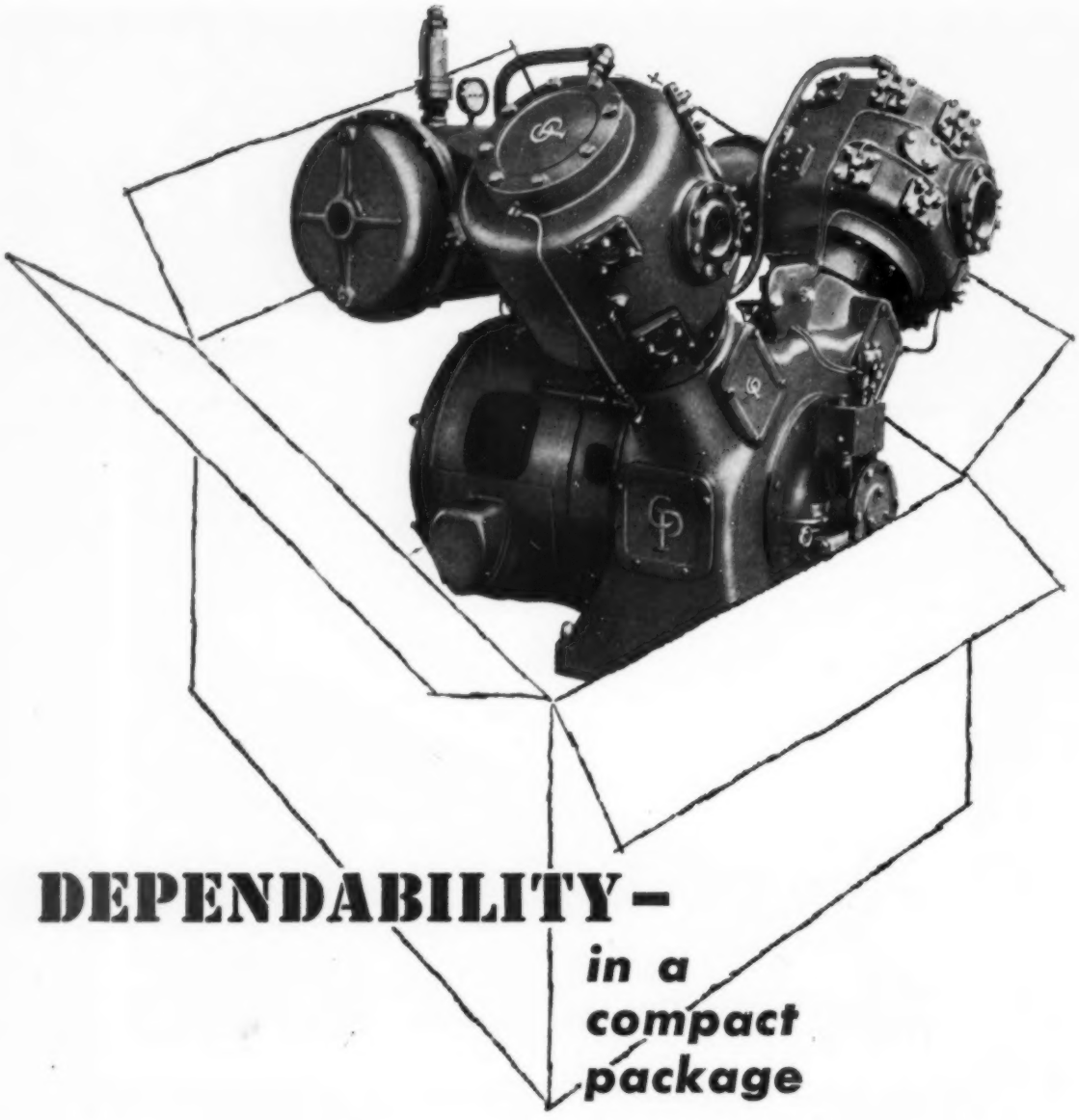

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in a compact package

With floor space at a premium, CP's space-saving Type Y Compressor is the answer! Shipped as a package ready for easy installation on a simple, inexpensive foundation, the dependable Type Y is designed for continuous operation and long life with high efficiency. Location of air inlet and discharge openings on cylinders permits the simplest and most compact piping arrangement. The "Y" arrangement also provides maximum accessibility to cylinders and to the easy-to-clean, easy-to-maintain shell-and-tube intercooler.

The Type Y has roller main bearings, precision connecting rod bearings, and multi-step capacity regulation. Available from 75 to 250 hp; 410 to 1663 c.f.m. capacity, and in single or multi-stage designs for a wide range of pressures. *Chicago Pneumatic Tool Co., 8 East 44th St., N. Y. 17, N. Y.*

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news of the industry

P. F. Keatinge Heads Sales, Becomes Vice-President Of Genl. Portland Cement

Smith W. Story, president, General Portland Cement Company, has announced the election of Paul F. Keatinge as vice-president and director of sales for Trinity White cements. Mr. Keatinge joined the Trinity Portland Cement Company in 1940 to establish that concern in the white cement business under the brand name "Trinity White". The Trinity Company later became the Trinity Division of General Portland Cement Company.

Mr. Keatinge, who is believed to be the dean of "white cement" men, started selling white cement in 1925 with Atlas Portland Cement Company in St. Louis. Previously he had been engaged in the retail building materials and stucco business. He was appointed head of the White Cement Department for Universal Atlas Cement Company when that department was formed in 1930. He has also been active in various trade associations.

Montana Phosphate Firm Working Underground Mine

Griff Williams, manager of the newly-organized Williams Phosphate Company, reports that production of commercial phosphate has begun at the Upper Ruby area of Madison County, Mont.

Mr. Williams stated that millions of tons of phosphate suitable for direct application to the soil if pulverized to 60- to 100-mesh, have been developed since the company took over the deposits in July, 1951. Mining is by underground operation. A 250-ton mill was installed at the portal of the main adit.

U.S. Firm to Spend Millions Exploring Canadian Asbestos

American Smelting and Refining Company will spend some $20,000,000 within the next few months to exploit asbestos deposits beneath Black Lake in Megantic County, Quebec, Canada, according to Tancrede L'Abbe, provincial minister without portfolio.

The deposit, believed to be the largest in the world, with an estimated 50,000,000 tons of ore, is owned by United Asbestos Corporation and will be developed jointly by American Smelting and United Asbestos, Mr. L'Abbe told a press conference.

A new flotation plant has been installed at the Crystal Mine at Elizabethtown, Ill., for the production of ceramic-grade fluorspar. This mine was purchased some time ago by the Minerva Oil Company, Eldorado, Ill. Fines from the sink-float plant will be treated at this operation, which was started late in 1953.

Coming Events

April 20-22, 1954—Boca Raton, Fla. 19th annual meeting, National Industrial Sand Association. Boca Raton Hotel.

May 3-5, 1954—Hot Springs, Va. 52nd annual convention, National Lime Association. The Homestead.

June 13-18, 1954—Chicago. 57th annual meeting and exhibit, American Society for Testing Materials. Sherman and Morrison Hotels.

July 22-23, 1954—Hot Springs, Va. Directors' meeting, National Crushed Stone Association. The Homestead.

October 18-22, 1954—Chicago. 42nd National Safety Congress and Exposition. Conrad Hilton Hotel.

Indiana Agstone Producers Meet at Indianapolis— Elect G. W. Bowen President

At the annual meeting of the Indiana Mineral Aggregates Association, Inc., held on March 16 in Indianapolis, the following officers were elected: President, Glenn W. Bowen, Hy-Rock Products Co., Marengo; vice-president, George Wheeler, Kirkpatrick Gravel Co., Cambridge City; secretary-treasurer, M. G. Johnson, The Merom Gravel Co., Indianapolis; and engineer-director, Ralph E. Simpson, Indianapolis.

Directors named include the following: N. E. Kelb, St. Paul Quarries, Inc., Indianapolis; Max Radcliff, Radcliff & Berry, Inc., Orleans; William Stonestreet, Stonestreet Gravel Co., Angola; C. A. Broecker, Newton County Stone Co., Kentland; H. C. Gorman, Russellville Stone Co., Inc., Russellville; M. R. Smith, Montpelier Stone Co., Inc., Montpelier; Claude Monce, Meshberger Bros. Stone Corp., Linn Grove; J. H. Law, Western Indiana Gravel Co., Lafayette; J. A. O'Connor & Sons, Inc., Peru; and C. C. Irving, Irving Materials, Greenfield.

Addresses were delivered by Robert M. Koch, executive secretary, National Agricultural Limestone Institute, Inc., Washington, D. C.; W. T. Spencer and D. E. Walker, both of the State Highway Department of Indiana; Clarence Windsor, city engineer; J. B. Patton, Indiana State Geological Survey; A. J. Wedeking, Indiana Toll Road Commission; and R. J. Kryter, The Esterline-Angus Company. Mr. Patton's paper bore the timely title: *Mineral Economics of the Crushed Stone Industry in Indiana.* Agricultural limestone problems were discussed by a panel composed of the following: G. W. Bowen (moderator); Robert M. Koch; Bruce Hardy, Scottsburg agriculturist; and R. W. Wilson, H. R. Alexander, Clark Baker, and Robert Cullen—all of the Indiana State A.S.C. Committee.

February Building Total Breaks Many Records, Sets New February High

The Dodge Reports of contracts awarded for future construction projects in the 37 eastern states smashed several records for dollar volume in February. The totals set an all-time high for any February in Dodge's 63-year history. The gross figure was $1,221,260,000, up 7 percent over the previous February high set in 1951, and 20 percent ahead of February, 1953. The totals also were 6 percent greater than in January, contrary to the usual tendency of totals to drop off slightly in February.

Combined with the surprisingly strong January contract awards, they set an all-time high for the January-February figures, being 9 percent ahead of the previous January-February high set in 1951, and 13 percent greater than the first two months of 1953, which started a record-breaking year.

They also set all-time high January-February totals in all three major classifications: nonresidential, residential, and public works and utilities.

"Study of the details of the figures reveals that they are well balanced and with only a usual percentage of the very large single engineering projects," it was stated by Thomas S. Holden, vice-chairman of Dodge.

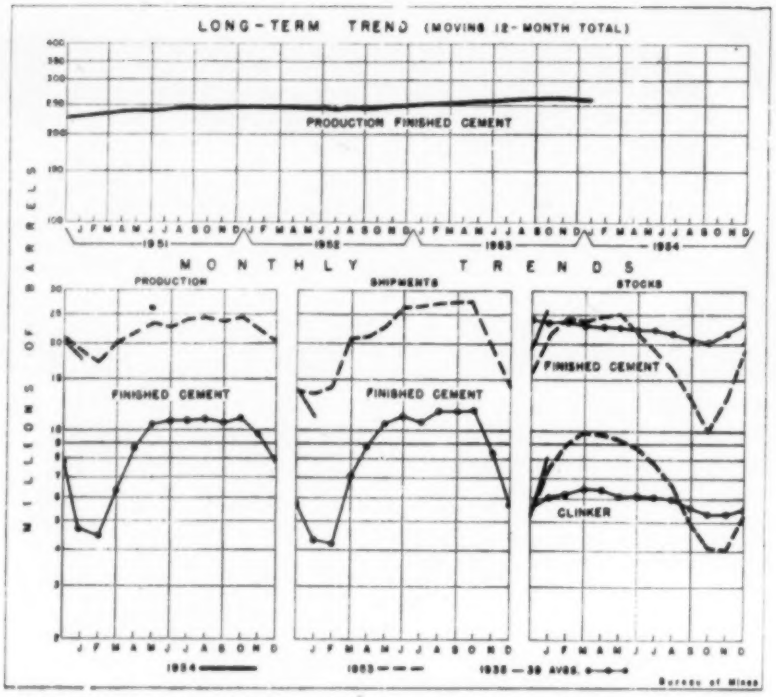
"I agree with a statement by a prominent editor and columnist (David Lawrence) concerning advance reports on the Dodge figures now being released, that 'there's something dynamic happening to the American economy right now' and with his further statement, 'The facts are that the latest statistics on construction are sensational in their revelation of an unprecedented building boom.'

"It is of the highest significance that these Dodge Reports out of which we make up our totals are reports of future construction, not past construction. They are actual projects that are in the first stage of construction, or that are about to get under way.

"They indicate high future employment of labor and high future sales of materials in one of the nation's basic industries."

Individual two-month 1954 award totals, compared with the like period 1953, were: nonresidential, $941,789,000, up 21 percent; residential, $971,255,000, up 11 percent; heavy engineering, $460,203,000, up 5 percent.

Individual February awards were as follows: nonresidential, $468,712,000, down 1 percent from January but 25 percent above February, 1953; residential, $508,773,000, up 10 percent over January and 22 percent above February, 1953; heavy engineering, $243,775,000, up 13 percent over January and 7 percent above February, 1953.



SUMMARY—Production of finished portland cement in January, 1954, as reported to the U.S. Bureau of Mines, totaled 17,769,000 barrels—6 percent less than in January, 1953. Mill shipments totaled 11,143,000 barrels—18 percent less than in January, 1953—while stocks of 25,857,000 barrels of finished portland cement on hand at the end of the month were 21 percent more than those on hand on January 31, 1953. Clinker production during the month totaled 20,773,000 barrels—a decrease of 2 percent from the January, 1953, figure.

PRODUCTION—One hundred and fifty-four (154) plants located in 37 states and Puerto Rico reported a production of 17,769,000 barrels of finished portland cement during the month, compared to 156 plants, which manufactured 18,856,000 barrels in January, 1953. Only 5 of the 20 producing districts reported increases, the only appreciable gains being registered in the New York-Maine and northern California districts. Tennessee showed the sharpest decline from the same month of the preceding year.

SHIPMENTS—Mill shipments of finished portland cement totaled 11,143,000 barrels, a marked drop from the 13,520,000 barrels shipped in January, 1953. Shipments were higher only in the Puerto Rico and Michigan districts. Many districts showed losses in excess of 20 percent. Oregon-Washington was off 41 percent, while the eastern Pennsylvania-Maryland, western Pennsylvania-West Virginia, and western Missouri-Nebraska-Oklahoma-Arkansas districts were each off 28 percent.

STOCKS—Mill stocks of 25,857,000 barrels of finished portland cement were on hand on January 31, 1954—21 percent more than at the end of January, 1953. Stocks of clinker totaled 8,209,000 barrels—10 percent more than on the same date a year ago.

$1,000,000 Research Center Of Natl. Gypsum Completed

The National Gypsum Company has now completed construction of its new $1,000,000 research center in the Town of Tonawanda, N. Y.

About 40 research personnel, working in a 47,200 sq. ft. building, are installing and supervising the installation of basic equipment. The center will have a staff of nearly 100 research workers, including clerical and maintenance help when operations are in full swing. Research Director William H. Harding is in charge of the staff.

Key research personel from seven National Gypsum research laboratories in Clarence Center, N. Y., New Orleans, La., Trenton, N. J., Bellefonte, Pa., Mobile, Ala., Niles, Ohio, and Alexandria, Ind., are putting the facilities in order.

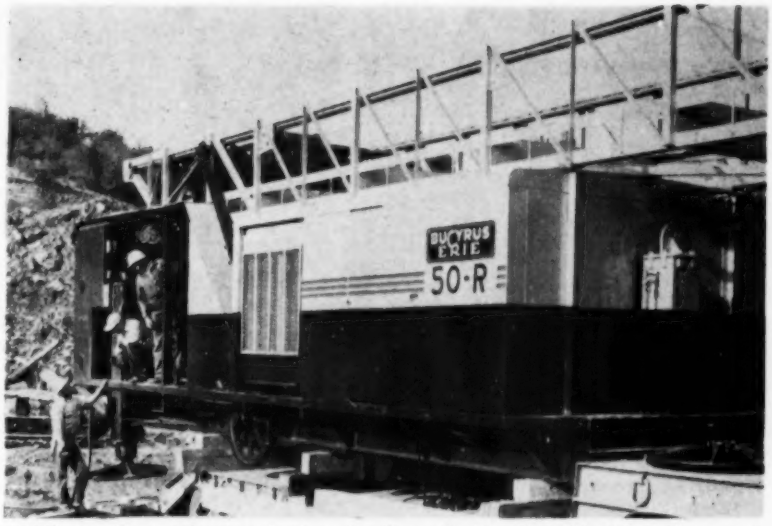
For the 52nd time in that many years, members and officers of the National Lime Association will gather for the annual meeting of the organization. Convention headquarters will be at The Homestead, Hot Springs, Va.; dates—May 3, 4, and 5.

Calaveras Cement Co. Pioneers in Use of Big Drill With a "Human" Touch

At the San Andreas, Calif., plant of the Calaveras Cement Company a 54-ton Bucyrus-Erie rotary drill was recently installed — the first of its kind in the West. Nine others are being used in operations in the East.

This unit, the Model 50-R, features a "human" mechanism which permits extension of the drill stem without manual help. An electrically-powered motor reverses itself, uncouples the end of the stem in the ground, wheels in an extension for the stem, attaches it to the portion still in the ground, and resumes the drilling operation. It can drill continuously to any depth, but in the Calaveras quarry it will be used for drilling primary blast holes to depths of 90 ft. or less. The maximum bore is 12⅞-in. diameter. Calaveras will use it to drill 9⅞-in. holes.

The big drill stands 54 ft. 2 in. high in working position and is mounted on 42-in. treads. Its variable-speed electric motors are regulated by Ward-Leonard electric controls.



● Calaveras Cement Company is pioneering the application of this big drill to the cement industry; the firm is also the first to use this drill in the West. Here the unit, a 50-R, which is reportedly the largest industrial rotary drill in the world, is in process of assembly at San Andreas.

$1,000,000 Cement Plant Shipped to Colombian Firm

The Colombian firm of Marmoles y Cementos del Nare, S. A., of Medollin, will soon have a complete cement plant, supplied by Allis-Chalmers Manufacturing Company of Milwaukee, Wis. This equipment is valued at well over a million dollars, according to the foreign freight forwarding firm Bernadine Company.

Shipments of heavy equipment include four 2-ton sand pumps, a 1⅛-ton packer, 200 tons of firebricks, 17 pieces totalling 163 tons, and a 25-ton rotary kiln part 536 in. long, 210 in. wide, and 110 in. high. Isbrandtsen Company is the shipper, and Roldan y Cia. of Bogota, Colombia, is the agent.

Florida Genl. Cement Div. Completes Second Expansion

The second enlargement of production facilities in five years has been completed at the Tampa (Fla.) plant of the Florida Portland Cement Division, General Portland Cement Company.

Capacity at the Hooker's Point plant has been increased from 6,000,000 bags annually at the end of World War II to 16,000,000 bags.

This plant, which was consolidated with the General Portland Cement Co. in 1947, is said to be the largest cement mill in the South and the largest operated by General. The first expansion project was completed in 1949 with the addition of a 426-ft. kiln. Another kiln of the same size was installed during the second phase of expansion.

Cover Picture....

● On the front cover of this issue is the unusual sand and gravel operation of the R. J. Noble Company at Orange, Calif. Output, running as high as 200 t.p.h., is used in an aggregate-bituminizing plant on the premises and for untreated road surfacing. The pit has been excavated to a depth of about 125 ft. Benches are used to enable bulldozers, working in relay on the lower and intermediate levels, to feed pit run material to a stockpile over a short feed tunnel. A steep belt conveyor system, in four flights, carries the material out of the pit to the processing plant.

Industrial Health Meeting Slated for April in Chicago

A program which covers literally hundreds of phases of industrial health will unfold when the 1954 Industrial Health Conference meets at the Hotel Sherman in Chicago, April 26 to April 30. More than 2,000 leaders in industrial health will consider the theme, "Protecting our greatest industrial wealth—employee health". Firms throughout the United States and Canada will send their medical directors, hygienists, dentists, and nurses to learn more about their own fields and what they can contribute to industrial health and safety.

Participating organizations include the Industrial Medical Association, the American Association of Industrial Nurses, Inc., the American Industrial Hygiene Association, the American Conference of Governmental Industrial Hygienists, and the American Association of Industrial Dentists.

Conversion From Coal To Oil Solves Air Pollution Problem

Gravel Products Corporation, Buffalo, N. Y., has solved about 95 percent of the air-pollution problem by the conversion of its boat and cranes, according to a company report to the local Chamber of Commerce.

Gravel Products reported that during the last four or five years the firm spent approximately $30,000 in changing a gravel dredge from a coal burner to an oil burner and about $5,000 in addition in converting the steam derricks at its Buffalo and Tonawanda yards.

● Some of the 250 guests who attended a dinner in Los Angeles honoring Stanton Walker.

250 Attend Industry Dinner Honoring Stanton Walker

Stanton Walker, director of engineering of the National Sand and Gravel Association and the National Ready Mixed Concrete Association, Washington, D. C., one of the lecturer-instructors at a ready mix short course at Los Angeles, was honored at an industry dinner on the evening of January 25. The affairs, attended by an "overflow" crowd of approximately 250 guests, was arranged and sponsored by the Southern California Rock Products Association and the Southern California Ready Mixed Concrete Association. Robert Mitchell, president of Consolidated Rock Products Company, Los Angeles, acted as master of ceremonies.

Among the guests were officials of various engineering and architectural societies, engineers and department heads of the state of California and the city and county of Los Angeles, and district staff members of the Army Corps of Engineers.

American Gilsonite Tests New Products at Pilot Plant

According to Ernest F. Goodner, president of the American Gilsonite Company, Bonanza, Utah, production of metallurgical coke and gasoline from Gilsonite will be tested on a semi-commercial scale at a $750,000 pilot plant there.

American Gilsonite is presently marketing a new product, Gilsulatex. This is an application of Gilsonite for use in insulating underground steampipes.

Production at American Gilsonite was not greatly reduced by the recent mine fire at Bonanza, which was luckily confined to one of the workings. Production continues on the Bonanza and Cowboy veins, and workmen are still engaged in recovery operations at the burned-out mine.

Godfrey Succeeds Caldwell As Signal Mt. Vice-President

The directors of the General Portland Cement Company recently elected Lee B. Godfrey vice-president of Signal Mountain Portland Cement Division, General Portland Cement Company. Mr. Godfrey succeeds L. Hardwick Caldwell, resigned, who has held this office with the company and its predecessor, Signal Mountain Portland Cement Company, since 1927. He will remain a member of the board.

Mr. Godfrey became associated with the Signal Mountain Cement organization in 1925 as a sales representative throughout the Southeast. In 1945 he succeeded the late W. H. Timothy, as assistant sales director, and two years later he was promoted to sales director, succeeding the late Irving F. Sisson. Mr. Godfrey still holds this post.

Lee B. Godfrey

1953 Construction Activity Tops $34,000,000,000 Mark

Expenditures for new construction put in place totaled $34,800,000,000 in 1953, according to preliminary estimates of the U. S. Department of Labor and the U. S. Department of Commerce. This represents the highest volume recorded in the 39 years for which data are available. The year was marked by a continued increase in most types of construction that had been retarded earlier because of war and defense needs.

Private construction was up 8 percent from 1952 to $23,600,000,000 in 1953, and public outlays rose 4 percent to $11,200,000,000. New records were established in 1953 for private spending on commercial, religious, educational, and public-utility construction, and for public outlays on schools, highways, and sewer and water construction.

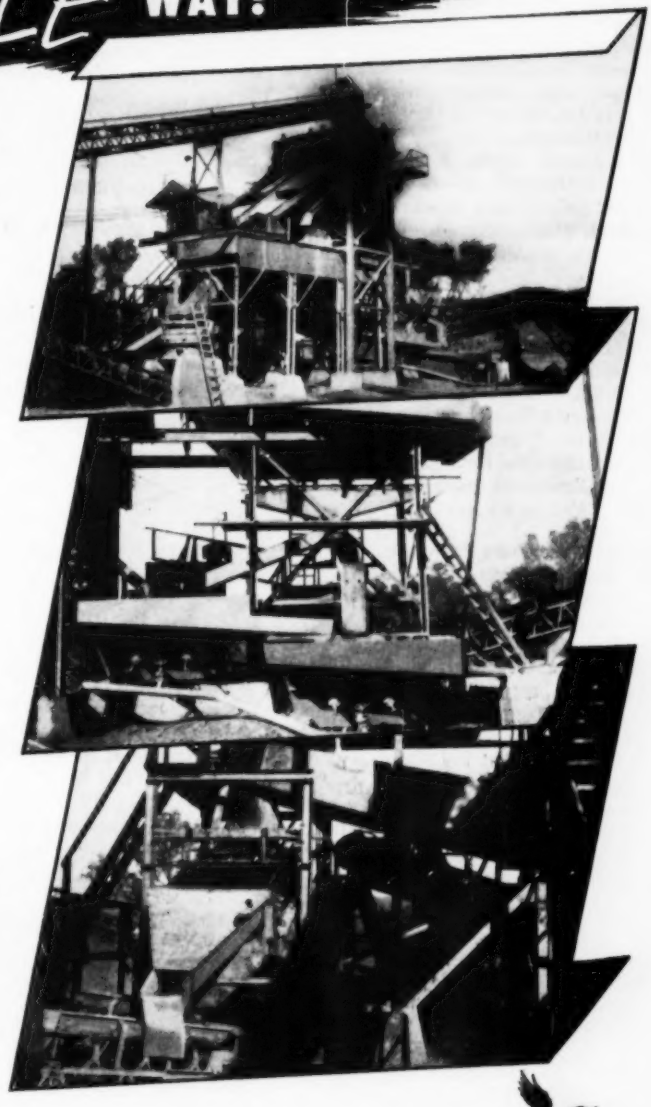
Private spending for residential building rose 7 percent from 1952 to almost $12,000,000,000 in 1953, and for the eighth consecutive year exceeded total expenditures for all public construction activity.

The only types of private work to show a 1952-53 decline were industrial plant (down slightly to $2,200,000,000), farm construction, and hospital building.

The 1952-53 rise in public construction expenditures mostly reflected gains in highways, schools, federal industrial plant, and sewer and water construction. Over a fourth ($3,200,000,000) of total public construction expenditures in 1953 went for new highways.

The usual decline in construction activity in the closing months of the year was no more than seasonal in 1953, as most types of construction remained strong. December expenditures, totaling almost $2,700,000,000, were down 11 percent from November, but were 4 percent above the December, 1952, total.

WINDSOR BUILDING SUPPLIES, INC. washes, classifies sand by the "Bargeful" THE EAGLE WAY!



Windsor Building Supplies, Inc., Newburgh, N. Y., on the Hudson River, employs a sound combination of profit-proved Eagle equipment to process materials to the tune of a couple of 600-ton barge loads daily **plus.**

Eagle Equipment at this plant consists of a 10′ x 20′ Water Scalping Tank for removing excess water and to provide preliminary classification, two 36″ x 25′ double screw, long weir, fine material washer-classifier-dehydrators, and a 24″ x 15″ single screw coarse material washer-dewaterer. This unit is equipped with log washer paddles for half its length, from below the water line on up. This washer is pictured at top of lower view.

The one double screw unit produces concrete sand and the other screw unit produces fine sand—sensitive adjustment of the long weir provide for retention or wasting of fines as required. Eagle's exclusive screw action scrubs material and wrings out excess moisture. These units are pictured in center view.

The coarse material unit processes gravel up to 3/4″ which is then screened, minus 3/8″ going to one stockpile and up to 3/4″ going to another.

Wherever aggregate is being produced there is a need for Eagle profit-proved equipment and Eagle engineering experience.

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A.S.T.M. Announces Plans For Meeting and Show At Chicago June 13-18

Chicago will be the host city for the 57th annual meeting of the American Society for Testing Materials, which will be held the week of June 13 to 18. Sessions have been scheduled at the Sherman and Morrison Hotels. The society's exhibit of testing and scientific apparatus and laboratory supplies and the ninth photographic display and competition will be displayed at the Sherman Hotel.

In addition to the general sessions, at which these addresses will be presented, there will be many technical committee meetings. Highlights will be the Marburg Lecture, to be presented by Harold F. Dodge, Bell Telephone Laboratories, and the Gillett Lecture, which will be given by R. L. Templin, director of research and chief engineers of tests, Aluminum Company of America. Technical papers to be presented will be published subsequently in the A.S.T.M. *Proceedings.*

Bacon Succeeds Traynor On Gen. Portland Div. Staff

Frank M. Traynor, formerly vice-president of the Florida Division of the General Portland Cement Company, Tampa, Fla., recently retired from that post, to be succeeded by Devereux Bacon Jr. Mr. Traynor will continue to serve as a member of the board of directors and as a consultant. Mr. Bacon, who is the sales director of the Florida Division, will retain the duties of this assignment.

Mr. Traynor joined the company in 1927, when the Tampa plant was under construction. At that time he was named director of sales, and subsequently he became vice-president and a director. Active in civic and service organizations, Mr. Traynor was awarded the Civitan's Outstanding Citizen Award in 1934.

Mr. Bacon has also been with the firm since 1927. From 1931 to 1935 he handled General Portland Cement sales activities in Puerto Rico. In 1947 he was appointed sales director.

General Portland Cement owns and operates plants in Tampa, Chattanooga, Forth Worth, Dallas, and Houston. The Florida Division markets Florida Portland Cement, Florida Masonry Cement, and Trinity White Cement throughout peninsular Florida.

Atlas Powder Co. Establishes $1,000 Science Scholarships

Atlas Powder Company, Wilmington, Del., manufacturer of explosives, chemicals, activated carbons, and industrial finishes, has set up eight $1,000 college scholarships for science students, according to Ralph K. Gottshall, president. The grants, he said, are part of the company's program to enable outstanding students to complete their scientific education in order to help meet some of industry's needs for technical personnel.

The awards will go to students who will be seniors during the 1954-55 college year, majoring in chemistry, physics, or any branch of engineering. The program, initially being proposed to 40 colleges and universities, will be administered by the Atlas committee on scholarships under the chairmanship of Dr. Thomas Kennedy, the company's director of industrial relations.

Devereux Bacon Jr.

Frank M. Traynor

Minn. Agstone Producers Name Mueller President At Minneapolis Meeting

The Minnesota Agricultural Limestone Producers Association held its sixth annual convention at the Curtis Hotel in Minneapolis on March 1 and 2. All but two of the members were present, and over 75 persons were registered at the meeting. President Perry Pederson of Harmony opened the business meeting, at which the following officers were elected: president, Gene Mueller, Mankato Ag. Lime & Rock Company of Mankato; vice-president, W. L. Bryan, Bryan Rock Products, Shakopee; and secretary-treasurer, Mrs. Gale Patterson, Patterson Quarries, St. Charles. The three directors elected for the ensuing year were Edwin Kappers, Kappers Construction Company, Spring Valley; George Nienaber, Nienaber Construction Company, St. Paul; and Leland Osmundson, Osmundson Brothers, Adams.

After the business meeting Robert M. Koch, executive secretary of N.A.L.I., Washington, D. C., gave a resume of developments in Washington which are of particular interest to aglime producers. He stated that the 1954 Agricultural Conservation Program not only would be better than the 1953 program had been as far as aglime tonnage is concerned but that present indications are that the 1955 program will develop a larger volume of aglime than the 1954 program. He reported that the Administration will ask for more money for 1955 than was appropriated in 1954.

A discussion covering the latest developments in percentage depletion followed; and the remainder of the afternoon was spent in outlining specific problems and questions of individual producers on the operation of the 1954 Agricultural Conservation Program. These were formulated into an agenda for discussion with representatives of the Minnesota A.S.C. on the following day.

Leaders of Tuesday's discussion included Clarence Palmby, chairman of the Minnesota A.S.C.; Merle Avery, his administrative officer; and Paul Barson, University of Minnesota staff. Producers gained a better understanding of the new program, and the program officials got a different slant on industry's problems.

An important outcome of this meeting was Mr. Palmby's agreement to discuss the 1955 A.C.P. with the members of the association prior to its submission to Washington for approval.

American Cement Makers Show Rising Sales, Profits During 12-Month Period

Major cement manufacturing companies reported sales and profits showing a general upward trend during 1953. Profit recorded for the Ideal Cement Company was given as $7,694,034 ($4.68 per share), against $7,581,233 ($4.63 per share) in 1952.

Blue Diamond Corporation's net income for 1953 amounted to $1,042,255, as compared with $858,893 in 1952. Sales for the year rose to $14,668,889; in 1952 sales were $12,874,226.

General Portland Cement Company officials stated that net earning after taxes were $5,226,500, whereas the comparable figure in 1952 was $4,894,200. Sales totaled $30,487,300 in 1953; the previous year's sales were $29,435,100.

Net sales of the Dragon Cement Company, Inc., in 1953 stood at $10,814,126; in 1952 the figure was $8,807,455. Net income last year was $1,050,764; the previous year's comparable total was $894,221.

For the Consolidated Cement Corporation a net profit of $779,500 was recorded for 1953, compared with earnings of $375,200 the year before. Net sales in 1953 stood at $5,911,200, while the total in 1952 was $4,527,200.

Calaveras Cement Company shipments during 1953, according to a company release, were 44 percent higher than in 1952.

Net sales and operating revenue of the Permanente Cement Company for the nine months ending October 31 was reported at $27,398,000; the previous year's comparable figure was $23,030,000. Net earnings were $3,458,000 for 1953; $3,461,000 for 1952.

N.Y. Gravel "Boom" Reported In Four-Square-Mile Area

Short of having an orchard of oil derricks on the north 40, the most profitable "crop" for a few Erie County (N. Y.) farmers in recent years has been sand and gravel. About a dozen landowners in Clarence, Newstead, Alden, and Lancaster have struck it rich, either leasing their land to big operators or selling it outright for prices that break down to around $4,000 to $8,000 an acre.

The biggest single deal reported recently was the purchase by the Lancaster Sand & Gravel, Inc., of a 275-acre tract owned by the Meyer family of Williamsville for $1,150,000.

The gravel "farming" activities are centered in a four-square-mile tract. Several pits are spotted in this area, and there is daily activity of steam shovels and trucks. The raw product from the ground is hauled to the sand and gravel companies where it is washed, screened and graded.

Long before the New York State Thruway was started, there was a heavy demand for sand and gravel in the construction boom, which the Thruway Construction boosted. Gravel, which in the memory of most of today's adults once sold for as little as 25 cents a ton, now brings from $1.25 to $1.60 in this area.

American Welding Society Holds Second Welding Show

The most elaborate display of welding equipment and accessories ever assembled will be on exhibit at the second Welding Show, sponsored by the American Welding Society. The show will be held at the Memorial Auditorium, Buffalo, on May 5, 6, and 7; and the society's national spring technical meeting will be held at the Hotel Statler in Buffalo, May 4 to 7. In addition to the machinery displays and technical meetings, visitors also will be taken on tours of major industrial plants in the area.

C. I. MacGuffie, General Electric Co., York, Pa., will serve as the exposition chairman, and Walter Goerg Jr., Air Reduction Sales Co., New York, as chairman of the convention committee. Advance registration cards and hotel information may be obtained from the American Welding Society, 33 W. 39 St., New York.

$4,000,000 Plant Started For Kaiser Gypsum Co. At Seattle Waterfront Site

Ground-breaking ceremonies on January 18 at a site along the Duwamish Waterway, Seattle, Wash., launched the building of a $4,000,000 plaster and gypsum board plant for the Kaiser Gypsum Company, Inc. Upon this occasion Claude E. Harper, vice-president and general manager, stated that the new facilities will be completed by September.

There will be eight structures, the largest a 155- by 600-ft. steel and concrete building equipped with the most modern custom-built machinery available. A 16-sided domelike covered storage unit, a six-story calcining building, a 250,000-gal. oil tank, and pier facilities for unloading gypsum ore ships are some of the features of the project. According to company spokesmen, the new mill will be the only one of its kind within 800 miles of the Puget Sound area. Aproximately 170 men will be needed to operate the plant, which will occupy 9½ acres of space. Estimated capacity will be 100,000,000 sq. ft. of board products annually.

The J. C. Boespflug Construction Company of Seattle was awarded the construction contract.

Alfred M. Esberg, a director and a vice-president of American Potash & Chemical Corporation recently resigned from his post with that firm.

● At the Tennessee Sand and Gravel Company's operation about 25 miles northeast of Memphis a 109-hp. diesel-powered crawler tractor has been teamed with a shovel and dragline to maintain an almost uninterrupted flow of gravel to the job site. With its dozer blade, the crawler tractor first loosens the gravel and then pushes it into the path of the shovel's dragline bucket, which quickly loads the fleet of trucks. The company's Allis-Chalmers HD-15 crawler tractor, equipped with Gar Wood dozer, helps move upward to 2,500 cu. yd. of gravel from the pit during a 10-hour work day.

Archie B. Zahn Retires From F. L. Smidth Post After 51 Years of Service

Archie B. Zahn, secretary of F. L. Smidth & Company, New York, since 1938, has retired from his post with the concern after 51 years of service. Last year, when he had completed 50 years with the company, he was honored at a luncheon and a banquet and was presented with many gifts from associates in the company and industries related to the cement business. (See PIT AND QUARRY, March, 1953, page 93.)

Mr. Zahn's career with F. L. Smidth began when he joined the 8-year-old concern in 1903. He advanced through a succession of assignments until he became a director in 1917. Ten years later he was made assistant treasurer, and in 1938 he was named secretary. He also served as secretary and a director of F. L. Smidth & Company of Canada, Ltd.

Described as a "walking encyclopedia of the cement industry", Mr. Zahn has seen many of the century's important developments and innovations in the manufacture of cement-making equipment. He is the inventor of the special "figure 8" chain utilized in rotary kilns for heat recuperation. F. L. Smidth rotary kilns and grinding mills are known in the cement-making industry throughout the world.

Mr. Zahn terminated his active service with the firm on February 1.

Archie B. Zahn

M. E. Volin Named Director Of Mines Bureau's Region V

Appointment of Melden E. Volin as regional director of Region V, Bureau of Mines, with headquarters at Minneapolis, Minn., was announced by Douglas McKay, Secretary of the Interior. Mr. Volin succeeds Paul T. Allsman, who was recently transferred to Knoxville, Tenn., as regional director of the Bureau's Region VII.

Since joining the Bureau in 1939 as a junior mining engineer at Tucson, Ariz., Mr. Volin has been stationed at Denver, Colo., Salt Lake City, Utah, and Albany, Oreg. Because of his wide mining experience, he was selected in 1949 to investigate mineral resources of Afghanistan and, in 1950, to survey sources of strategic and critical minerals in North Africa. From April 1950 until his present appointment. Mr. Volin has been chief of the Mining Division in the Bureau's Region II, with headquarters at Spokane, Wash.

In his new post, Mr. Volin will direct Bureau of Mines activities in Minnesota, Michigan, Wisconsin, North Dakota, South Dakota, Nebraska, and Iowa. Bureau facilities in the region include an experiment station at Minneapolis, the Charles R. Robertson Lignite Research Laboratory at Grand Forks, N. Dak., and field offices at Rapid City, S. Dak., Platteville, Wis., and Duluth, Minn.

Name of Broward Quarries Changed to Maule Industries

Broward Quarries, Inc., Fort Lauderdale and Wilton Manors, Fla., owned and operated by the Maule Industries of Fort Lauderdale, has been doing business since January 1 of this year under the name of the parent company, Maule Industries, Inc.

An account of the opening of the new Fort Lauderdale quarry and block plant was published in the February issue of PIT AND QUARRY.

Melden E. Volin

Magnet Cove, Ark., Plant Processing Barite Mineral For New Carrying Agent

Production of Rubarite is being carried out in Magnet Cove, Ark., by the only plant of its kind in operation.

Rubarite is the trade name of a free-flowing powder which consists of unvulcanized synthetic rubber and barite mineral. The latter, when reduced to fineness, serves as a carrying agent for the rubber particles, keeping them effectively separated and thus providing a high degree of dispersion. This characteristic is said to provide for smoother blending when finally mixed with asphalt.

Rubarite, Inc., the company which produces this product, is owned jointly by The Goodyear Tire & Rubber Company, The National Lead Company, and Bird & Son, Inc. Rubarite is said to represent the first successful mix using unvulcanized synthetic rubber. It is produced by co-precipitating synthetic rubber latex and extremely small particles of the barite mineral, which was once a waste material.

Air Pollution Control Assn. To Hold 47th Annual Meeting

The only meeting devoted exclusively to air pollution and its control to be held in this country, will be at the Patten Hotel, Chattanooga, Tenn., on May 3, 4, 5, and 6.

At this 47th annual meeting of the Air Pollution Control Association, Pittsburgh, Pa., some 600 management executives and other representatives of the industries, research scientists, and air-pollution control officials will attend the sessions.

Technical papers will be presented covering the subjects of municipal problems, dusts and fumes, coal, incineration, petroleum, steel, odors, measurements, and meteorology. Papers germane to nonmetallic minerals and related industries were as follows: *The Use of a Wet Scrubber in Gas Cleaning and Absorption,* Robert Kopita, manager, Scrubber Division, Peabody Engineering Corporation; *Factors in the Design and Operation of Industrial Dust Collectors as Related to Air Pollution,* H. C. Dohrmann, C. A. Gallaer, J. W. Schindeler, Buell Engineering Company; *New Uses of Electrical Precipitation for Control of Atmospheric Pollution,* S. E. Specht and W. W. Sickes, Research Corporation; *Dust and Fume Problems in the Cement Industry,* Richard F. O'Mara, Western Precipitation Company; and *Filtration of Hot Gases,* R. T. Pring, American Wheelabrator & Equipment Company.

Universal Atlas Promotions Announced for Five Men On Firm's Executive Staff

Promotions have been announced for five men on the executive and managerial staffs of the Universal Atlas Cement Company, a U. S. Steel Corporation subsidiary.

Fred T. Wiggins was elected to the newly-created office of vice-president, commercial; James C. McClure became vice-president and general sales manager; Henry C. Schmielau was also named a vice-president, in addition to his assignment of comptroller; Mac H. Hull was appointed assistant to the president; and W. Owen Lawrence was made general operating manager.

Mr. Wiggins joined Universal Atlas in 1926 at Birmingham, where he served in the sales department until 1934. In that year he became sales manager of the Birmingham area. He was successively assistant to the vice-president, sales (western region); vice-president and assistant general sales manager; and vice-president and general sales manager.

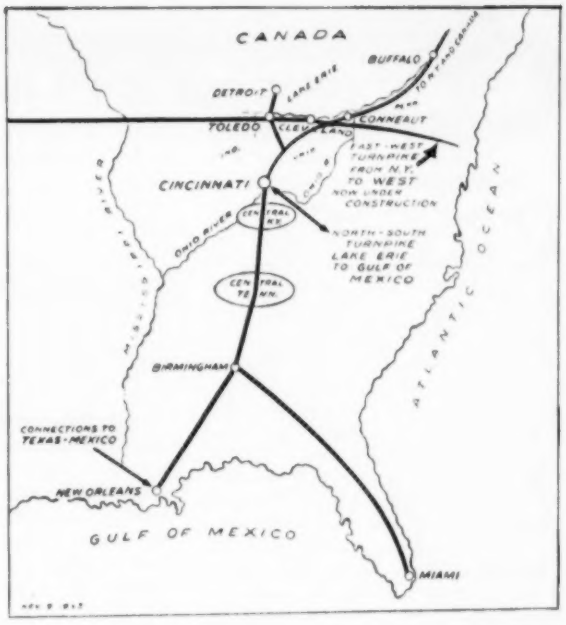
Mr. McClure has been with the firm since 1927. Since that time he has been technical service engineer in Ohio and in Pittsburgh; district sales manager in Albany, N. Y.

Mr. Schmielau's career began when he went to work at the Chase National Bank as a boy. He joined Universal Atlas in 1911 in New York as a clerk. In later years he rose to the post of bookkeeper, then general auditor, assistant treasurer, and assistant secretary, director, and comptroller.

A member of the Universal Atlas staff for 33 years, Mr. Hull served in the following positions: correspondent; district sales manager in St. Louis; assistant to the vice-presiden, sales (Chicago); assistant to the vice-president, general sales (New York); and assistant vice-president.

A job at the Leeds, Ala., plant of Universal Atlas was Mr. Lawrence's first contact with the company. He served there in several capacities before going to the New York office as field engineer. Later he returned to Leeds as plant engineer and subsequently became assistant plant manager there. In 1948 he was named assistant plant manager at the Buffington, Ind., plant and the following year plant manager, the post he held when he was promoted to general operating manager.

● Announcement has been made of the formation of the Lake Erie to Gulf of Mexico Turnpike Conference, with headquarters in Cincinnati, Ohio. William J. Reardon, Cincinnati, is acting chairman. It is the purpose of this conference to co-operate with all state, federal, municipal, civic, and other ex- the southern states to complete a north-south turnpike from Lake Erie to the Gulf of Mexico via Cincinnati. The accompanying map shows the general plan of the route.



Basic Materials Conference Meets in Chicago May 17-20

The three-day Basic Materials Conference to be held at the International Amphitheatre, Chicago, May 17-20, will be devoted this year to a comparison of the properties and chaarcteristics of materials in relationship to each other. The conference will be held concurrently with the Basic Materials Exposition, the product development show.

T. C. DuMond, editor of *Materials and Methods*, will be general chairman of the conference. Serving with him, on an advisory commitee, will be a group of 18 scientists, researchers, and design engineers, drawn from the top levels of the country's industrial and governmental organizations. Clapp & Polliak, Inc., New York, N. Y., will be the producers of the conference.

Scioto Lime & Stone Co. Adds New Products to Line

The Scioto Lime and Stone Company of Delaware, Ohio, has gone into the production of stone as well as lime, including crushed stone, agricultural limestone, and sand, W. A. Reaney, manager, has announced.

The firm has taken over its own stone quarries, which for the last five years were leased by the National Lime and Stone Company.

J. W. Rooney, former superintendent of the Riverside quarry of Material Service Corporation, Lyons, Ill., has been appointed superintendent of the May Sand and Gravel Corp., Fort Wayne, Ind.

J. C. McClure

F. T. Wiggins

H. C. Schmielau

W. Owen Lawrence

M. H. Hull

30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE April, 1924, issue of PIT AND QUARRY reflected the rapid expansion of the industries it covers, not only in its editorial content, but also in its advertising; this issue carried 125 pages of advertising, probably a record at that time. Numerous articles and news items told of new plants, plant expansions, and other indications of improving business conditions. The operating articles in this issue covered a wide variety of industries. One of the new plants described was that of the Alabama Sand & Gravel Company near Montgomery, Ala. This was actually a dual operation with two separate screening and classifying departments, one supplied by a suction dredge and the other by shovel, locomotive and cars, and belt conveyor.

Another article also described a dual operation of a different type—the John Evans Lime Company and the Daniel Evans Stone Company of Marion, Ohio, both owned jointly by these two brothers. The crushed stone plant was destroyed by fire late in 1923, and the new plant had just gone into operation when it was visited. It was believed that the fire was started by I.W.W.'s, who were passing through town. The lime plant had 10 vertical kilns of 2,500 bushel per day capacity. A new Miscampbell hydrating plant of 80-ton per day capacity had recently been installed.

Another lime plant expansion program described was that of the Abel Magnesia Company of Cedarville, Ohio. This concern replaced old shaft kilns with two new steel-shell kilns.

An interesting sand and gravel operation was that of the Crow Creek Gravel Company, Madison, Ark. This company used a 1,000-ft. span, 1½-cu. yd. Sauerman slackline cableway excavator. The deposit was shallow, and the angle of the excavator cable had to be changed frequently. The problem of discharging from the bucket was solved by mounting a shuttle car on rails on a trestle over the plant bins. This car could be moved to any desired discharge point for the bucket and then was moved to discharge into the bins.

An experimental feldspar plant was operated by the Gloversville Feldspar Company in northern New York State to prove several deposits in the vicinity. These tests proved successful, and the name of the company was changed to United States Feldspar Corporation, which was to build a modern full-scale plant.

Association membership was given a boost in a guest editorial entitled, *Why Should I Join the Crushed Stone Association?* Also in the issue was an announcement of the membership committee of N.C.S.A., which was to conduct an intensive membership campaign. The committee, headed by Otho M. Graves, contained the following well-known names: A. J. Blair, E. J. Krause, T. D. Weston, John Wunder, A. R. Wilson, Wm. Hammerschmidt, C. M. Doolittle, W. W. Boxley, W. F. Wise, H. H. Brandon, and others. Included also were the editors of publications in this field, including John J. Fitzgerald of PIT AND QUARRY.

General articles covered such varied subjects as relaxation of immigration restrictions to solve the labor problem; how to collect bad debts; standardization of magnesite; locomotives for haulage in pits and quarries; and oil engines.

News of activity in the cement industry included the following items: start of construction on Pacific Portland Cement Company's new $14,000,000 plant at Redwood City, Calif.; announcement of the start of construction on the Wabash Portland Cement Company's 1,500,000-bbl. plant at Osborn, Ohio; progress on the new 1,500,000-bbl. plant of the Peerless Portland Cement Company at Detroit, Mich.; completion of the new 1,000,000-bbl. plant of the Manitowoc Portland Cement Company at Manitowoc, Wis.; and launching of construction on the 750,000-bbl. plant of the Clinchfield Portland Cement Company at Kingsport, Tenn. The Riverside Cement & Asbestos Company of Los Angeles announced plans for a 1,000-bbl. per day plant near Eden Hot Springs, Calif., and the Linwood Cement Company stated that a $2,000,000 new plant would be erected near Davenport, Iowa.

In other industries there was also great activity. The Basalt Rock Company was reported to be building a $150,000 crushed stone plant at Napa, Calif.; a 5,000-ton per day crushed gravel and sand plant was going up at Baldwin Park, Calif., for the Union Rock Company; the Greenlawn Gravel Company had just completed a new plant near Columbus, Ohio; the Kaiser Paving Company had erected a sand and gravel plant at Redding, Calif.; and the Staso Milling Company had built a 250,000 slate grinding mill near York, Pa., which had a capacity of 500 tons of slate granules daily.

Many names still familiar in this industry appeared in the April, 1924, issue. One news item told of the appointment of C. D. Franks as assistant general manager in administrative charge of Portland Cement Association work in the northern states, with offices in Chicago. He had been district engineer in charge of the Indianapolis office since 1916.

Mississippi Bentonite Beds Build Booming Local Industry

According to *Mississippi Magic*, published by the Mississippi Agricultural and Industrial Board, rich deposits of bentonite are being mined and processed in the northeastern part of the state for commercial use by the American Colloid Company at White Springs.

This plant was opened recently, and the first shipments began last August. Built at a cost of $150,000, the plant turns out approximately 130 sacks of fine-ground Panther Creek bentonite per hour. Three crews maintain round-the-clock operation.

It has been reported that American Colloid has leased sufficient bentonite-bearing land in this area of Mississippi to support operation of the White Springs plant for about 20 years. Owners of the leased land receive a royalty of approximately 25 cents per ton, depending upon the quality of the bentonite. A deposit 1 foot thick over an acre of land will produce 1,800 tons.

Dust Collector Successful At Big Diatomite Deposit

According to an announcement released by Otto Kohl, general manager of the Chick Bed diatomaceous earth property and processing plant at Fernley, Nev., dust-collecting equipment installed there has proved successful. Cost of the installation was more than $10,000.

The Chick Bed property, 22 miles northeast of Fernley, reportedly contains one of the largest single deposits of diatomaceous earth on the North American continent. It covers more than 4,000 acres.

176th General Meeting of A. I. M. E. Held at Statler Hotel in New York

Industrial Minerals Papers Cover Wide Range of Subjects

NEARLY 3,000 engineers and other representatives of the mining industry attended the 176th general meeting of the American Institute of Mining and Metallurgical Engineers, held at the Hotel Statler in New York City, February 14 to 18, 1954. This gathering marked a return to that city after last year's successful meeting on the West Coast.

An impressive technical program of some 400 papers covering a wide range of subjects was presented before the 12 divisions and branches of the Institute. The social side was not overlooked; several events had been arranged which were climaxed by the annual banquet and the president's reception at the Waldorf-Astoria on Wednesday evening. The incoming president, Leo F. Reinartz, was the principal speaker. At the banquet the Institute medals and honors were presented. Noteworthy was the honoring of S. S. Clarke, who received the William Lawrence Saunders Medal "for his distinguished abilities as a mining engineer; for his resourcefulness and his genius in adapting modern, and in creating new, mechanical aids in mining practice; and for his notable contribution to the productivity and longevity of the Tri-State District".

The welcoming luncheon on February 15 was highlighted by the address of Dr. Grayson Kirk, president of Columbia University, who spoke on the bi-centennial celebration of that widely-known institution.

The comprehensive technical paper program covered many phases of geology, mining, metallurgy, and petroleum engineering. All these fields were well represented by delegates attending the meeting.

In the sessions of the Mining Branch a full day was given to the presentation and discussion of papers on drilling problems. Although the papers described principally hard rock underground practice and problems, a paper by Tell Ertle, director, Institute of Mineral Industries at Ohio State University, on *Rotary Drilling of Strong Rocks* had a wider appeal. There was also a full session of this branch devoted to *Support of Mine Workings,* at which roof bolting was discussed in three papers.

The work of the Bureau of Mines at College Park on fundamental studies based on small models, was the subject of a paper by Louis A. Panek. *Application of Rock Bolting* was discussed in a paper by E. M. Thomas, also of the Bureau of Mines, who gave specific examples. The third paper on this subject, *Rock Bolting in the Northwest Metal Mines* by Robert Breckenridge and Lloyd Pollish, discussed its advantages over other means of support, based on 13 years of actual experience in this area. Some advantages cited were the stabilizing effect on adjacent rock, excavation in development headings reduced by substitution of rock bolting for timber, and financial savings in reduced costs. In some instances the technique has made possible the mining of ground which had previously proved uneconomical to mine.

Of interest to PIT AND QUARRY readers were the various sessions of the Industrial Minerals Division.

A highlight of this group's program was a timely symposium on fluorspar at which ten papers were presented and discussed.

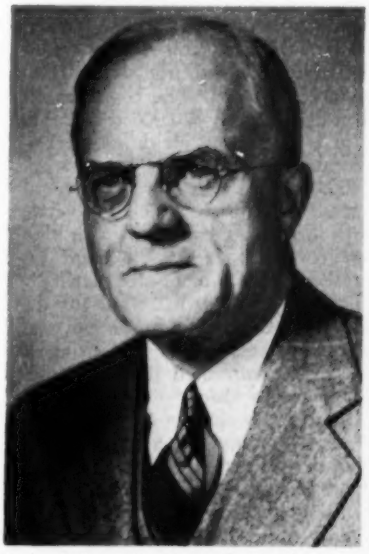
Fluorspar Requirements for the United States, by James A. Barr Sr., stressed the tremendous growth in consumption of that mineral. He pointed out that the 1932 consumption of 54,000 tons has grown almost tenfold in the last 20 years. Projected demand for 1975 is likely to exceed 1,000,000 tons. Mr. Barr pointed out that demand for the high-quality, acid grade is increasing rapidly. If atomic energy power is developed on a commercial scale, it will become a large consumer.

Domestic production accounts for about 50 percent of consumption and is not expected to be maintained after 1960-65, as ore reserves are not being added to keep up with depletion.

A major loss of flourine to the national economy is the 300,000 tons per anum flourine equivalent in phosphate rock. Research is indicated towards recovery from this source and the development of substitutes.

A paper by K. D. Jacob and W. L. Hill discussed the use of phosphate rock as an economic source of the element.

In his paper on *Fluorspar Supplies*



F. L. Agthe, Allis-Chalmers Manufacturing Company.

Leo F. Reinartz, newly elected A.I.M.E. president.

in the United States, A. H. Sutton concluded that there are some 11,800,000 tons of 35 percent or better CaF_2 'spar of volcanic origin west of the Mississippi, 8,500,000 tons of usable ore in the Illinois-Kentucky field, and 700,000 tons in Alaska. At present mining rates, this is enough to last 35 years.

Other papers dealt with the geology of occurrences in the United States, and domestic and foreign resources of 'spar and its beneficiation.

A paper on *Mining Engineering in the Portland Cement Industry* by F. L. Agthe, Allis Chalmers Mfg. Co., was intended to awaken in high school students an appreciation of the opportunities available in the industrial minerals industries for a career in mining enginering. It was pointed out that the training received at an accredited school of mines should be useful to the engineer who enters the cement industry either as an operating man or as an engineer responsible for plant development.

At the well-attended Cement, Lime, and Gypsum Session of the Industrial Minerals Division, meeting jointly with Minerals Beneficiation, modern kilns, refractories, and preheaters for the lime and cement industries and a new wet classification method for cement raw materials were the topics of four excellent speakers.

Dr. O. G. Lellep, Allis-Chalmers Mfg. Co., the famous inventor of the Lepol kiln, presented a review of European high-efficiency kilns, sinter-grate installations, shaft kilns, calcinators, and the recent double-pass Lepol kilns, which are now operating with a heat consumption of only 580,000 to 630,000 B.t.u.'s per bbl. of cement. He emphasized that relative costs of fuel is the principal reason for different techniques in Europe and this continent. European practice is more aware of the need to recover as much heat as possible from fuel since the wages of 40 men working one hour are equivalent to the cost of one ton of coal. In Pennsylvania the wage equivalent of the same number of man-hours would buy ten tons of coal. With modern fully mechanized shaft kilns, cement is being burned with a heat expenditure of 700,000 B.t.u.'s per barrel, and lime with 3,200,000 B.t.u.'s per ton.

Dr. O. G. Lellep, inventor of the Lepol kiln, discussed European installations.

C. C. Van Zandt, Lone Star Cement Corp.

Very efficient rotary kilns are now in use, preheating kiln feed and recovering heat from clinker. The Lepol kiln in dry process work has shown low fuel consumption and low dust loss. A plant in Sweden burned 1,000,00 bbl. in this type of kiln with heat expenditure of 600,000 B.t.u.'s per barrel. The Holderbank-Gygi System uses 620,000 to 720,000 B.t.u.'s per barrel but develops considerable dust. In wet process work 1,100,000 B.t.u.'s per barrel of cement is achieved. The low wage rates in Europe, combined with high fuel cost, have led to a great interest in kilns which are thermally efficient. The raw materials for the kiln are preheated with flue gas, and in dry process plants pelletizing is usually accomplished at this stage to decrease dust losses.

During the ensuing debate, O. N. Wicken discussed the circulating load of under-burned clinker in the Lurgi sinter machine and the effect on alkali volatilization. R. A. Kinzie presented up-to-date experiences with the Lepol installations of the Santa Cruz Portland Cement Company and reported that calcium chloride has been used to increase alkali volatilization with no detrimental effects on the traveling grate.

New developments in the field of insulating refractories, and ceramic lifters and crosses for increased heat economy in rotary kilns were described by W. C. Burke. L. Tschirky, C. D. Rugen, and P. P. Clark discussed details of firebrick installation, metal separating plates, grouting, and smearing.

George K. Engelhart, Fuller Co., in his paper, *Suspension Preheating of Dry Pulverized Materials,* described a German process for the preheating of pulverized kiln feed in cement making, using a multi-stage treatment in suspension with waste kiln gases. At the Evansville, Pa., plant of the Allentown Portland Cement Company, the use of the process has been accompanied by increased capacity and a reduction in fuel. It has been installed on a 7- by 125-ft. kiln at the latter plant. Capacity has been raised from 260 to 1,500 barrels per day, and fuel requirements have dropped from 1,100,000 B.t.u.'s to around 700,000 B.t.u.'s per barrel. At the present time only 60 percent of the waste gas is being used for preheating.

The discussion in which G. A. Gaffney, C. D. Rugen, and J. A. Kivert took part dealt with capital cost versus fuel saving. The author predicted that this suspension preheater would not only improve production and fuel economy for existing short rotary kilns, but might also be the most economical for new installations.

C. C. VanZandt, Lone Star Cement Corp., presented recent test

G. V. Woody, Allis-Chalmers Manufacturing Company.

results with Dorrclones for closed circuit grinding of cement raw slurry at the Lone Star Cement Corporation's plant at Norfolk, Va., describing mechanical improvements and presenting figures for increased capacity and grinding economy.

C. F. Clausen was chairman and Will Mitchell Jr. co-chairman of the meeting.

One of the most interesting items on the program was a description by G. V. Woody, Allis-Chalmers Mfg. Co., of a new vibrating ball mill being developed by his company. He emphasized that the mill is still in the experimental stage and not yet on the market. The data already obtained in more than two years of testing, however, indicates that it has a real future for both wet and dry grinding. This mill, Mr. Woody said, is primarily a fine-grinding unit, but nothing indicates that it cannot be adapted to coarse grinding.

These mills, according to Mr. Woody, have been operated in both closed and open circuit and have been made in various sizes. Tests indicate that the capacity of a 42-by 42-in. vibrating ball mill, when grinding cement clinker to a fineness of 1,750 surface area and operating in a combination open and closed circuit, has about the same capacity as a conventional mill 7 ft. in dia. by 11 ft. long and operating in closed circuit with an air classifier. Tests on wet grinding of taconite ore show similar results. Tests also show a slightly lower "work index" factor than in conventional mills, meaning lower horsepower requirement, and appreciably less ball wear per ton of material ground. According to the speaker, indications are that these mills will cost less to buy, install, and maintain than conventional types and also that they require less space.

Mining Methods at the Barberton Limestone Mine, Columbia-Southern Chemical Corporation, was the subject of an informative paper by H. F. Haller. In an industrial region a large underground mine has been developed, turning out 1,000,000 tons annually of limestone from a deposit 2,200 ft. underground. With room-and-pillar methods, 36 ft. widths are mined without roof support. Although roof bolting was originally planned, experience has shown that drilling of roof holes relieves gas pressure, which allows the roof to strengthen so that no support is required. Stopes are worked to a height of 46 ft.

Since the labor pool is industrial, the operating force has been built up of men without mining experience. Job training and work organization have enabled a good underground mining group to be established. Changes in drilling practice, along with the introduction of jumbo rigs, have kept mining costs down.

Modern underground equipment was the highlight of a paper by H. H. Bruhn and E. H. Miller on *Potash Mining Practice in the Carlsbad, New Mexico, Area.* Modern mining machines, loaders, shuttle cars and trucks for movement of supplies and personnel are all used in present-day recovery of potash from the underground mines of the region. Toxic fumes exhausted from the diesel engines on the equipment are removed in purifiers mounted on each unit. In main haulage-ways ore is moved at speeds up to 20 m.p.h. The highly developed use of mechanical underground transport enables men to be moved to their jobs quickly and efficiently and makes for a well organized movement of supplies and repair equipment throughout the mine workings.

Careers in industrial minerals was the subject of a session at which four papers were presented. *Training for a Career in Industrial Minerals,* by Raymond B. Ladoo, stated the case for the generalist in the industry. Training for government service, for teaching positions, and as a professional specialist, he stated, is not the academic preparation needed by a man who aspires to be a producer, or a producing executive in the industrial mineral field. From his experience as a consulting engineer in his field, Mr. Ladoo saw the need for a well-rounded generalist who could co-ordinate the work of specialists. For one to enter this phase of industrial minerals, training along broad lines is necessary. A good grounding in engineering, mathematics, and surveying should be accompanied by proper training in English, he declared. The ability to write and speak clearly and logically is essential.

Mr. Ladoo stressed the need for training in such subjects as history, a foreign language, and general economics. He believes that a course on human business relations, based on a sound practical basis, should be given. This training is necessary to prepare the young engineer for some of the difficult situations he will find in business life. Among the technical subjects, the speaker declared, elementary chemistry, physics, geology, and economic geology are essential, along with mineralogy. The winning of minerals from the ground and their marketing and uses are also of importance.

Two sessions of the Industrial Minerals Division were allotted to abrasives. Thomas D. Murphy of the U. S. Geological Survey, in his paper *High Purity Silica Resources of the Northeastern United States,* stated the area has resources adequate to supply local industry. Silica sand suitable as a molding sand, for sandblasting, ceramic industries, and glass are limited to the coastal plain in New Jersey, Delaware, and Maryland. From the sandstones of western and south-central Pennsylvania and eastern New York can be derived a high-quality sand for glass melting, for the abrasive industry, and for foundry work and other uses. Pennsylvania, New York, and Massachusetts all have quartzite suitable for refractories, mill liners, and other uses.

In a paper entitled *Natural Abrasives* T. H. Janes discussed the various materials of this class and their physical characteristics. Since 1920 artificial abrasives have to a large degree replaced the natural type. This is especially so in the metal-grinding field. However, there are certain uses which require the natural type.

Crushing, Treating and Sizing of Abrasives, a paper by H. L. Schultz, pointed out that initial processing is usually common to all abrasive grains. Crushing of the raw abrasive is in three steps: primary, secondary, and tertiary, a grain-shaping treatment. End use determines the treatment phase, which is a process to bring out such characteristics as capillarity, bulk specific gravity, and purity. The means to do this is either mechanical, magnetic, or chemical, or a combination.

Water supply—from the technical and the legal control point of view—and drainage problems were the subjects of two sessions which provoked considerable discussion. Elmer D. Hershey presented a paper on *The Importance of Ground Water to the Future of Arizona's Mining Industry, and the Relation of Industrial Water Supplies to Irrigation Supplies and the Legal Control Thereof.* In that state water limits the full development of other resources; 97 percent of the water supply is used by irrigated agriculture, and only 3 percent by municipalities and industry. Present supplies are not sufficient for new mining ventures or for the expansion of existing mines. Future developments must depend on underground water supply. The mountain region in which most mining activities center is the main water source of the state.

(Continued on page 141)

The new officers of the National Sand and Gravel Association are, left to right: John W. Murphy, president; Roy E. Weaver, vice-president; and E. Phil Gemmer, secretary-treasurer.

38th Annual N. S. G. A. CONVENTION Sets Several New Records

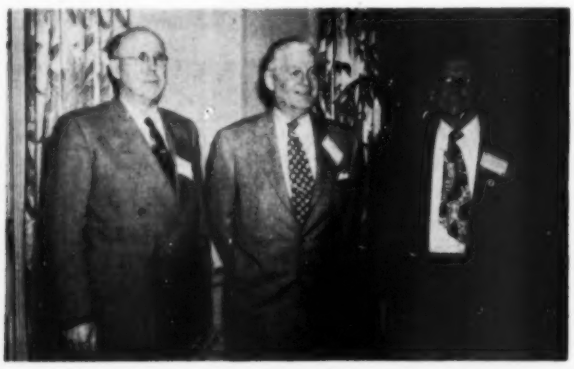
New highs set in producer and total attendance and in number of exhibits

another ON THE SPOT report

NEW RECORDS in production and sales have been set by the sand and gravel industry ever since the war, and the same is true of its annual convention. The 38th annual convention of the National Sand and Gravel Association, which was held jointly with the 24th annual convention of the National Ready Mixed Concrete Association, in every way eclipsed all previous meetings. The combined conventions, and their joint Machinery Exhibition, held February 15 to 19, 1954, at the Conrad Hilton Hotel, Chicago, Ill., drew a record attendance of 4,803—far exceeding the previous record of 3,395 for an exhibit year set at the same place in 1952.

The keynote of this meeting was optimism and confidence in the future of this country and of these particular industries. This spirit was reflected in the tone of the various featured speakers, in the many meetings, and in the general attitude of the producers and exhibitors. All agreed that the time has come for aggressive selling, but that, with united effort, business can be kept on the upward trend required by the continued growth of our economy.

Directors of the N.S.G.A. Manufacturers Division for 1954 include (seated, left to right): D. McM. Blackburn, Hendrick Manufacturing Co.; W. A. Rundquist, Pioneer Engineering Works, Inc.; R. P. McKenrick, Blaw-Knox Co. (new chairman); and J. Craig McLanahan, McLanahan & Stone Corp. (Standing, left to right), C. B. Laird, Eagle Iron Works; Emil Deister Jr., Deister Machine Co.; W. Neil Richardson, Universal Engineering Corporation; and E. D. Stearns, Barber Greene Company.



Claude L. Clark, executive secretary, Ohio Sand and Gravel Assoc. and Ohio Ready Mixed Concrete Assoc., Columbus; Paul R. Smith, executive secretary, Empire State Sand, Gravel & Ready Mix Assn., Buffalo, N.Y.; and H. Hershey Miller, resident engineer, Pennsylvania Sand & Gravel Producers' Assn., Harrisburg. These three men reported on the activities of their associations. Also participating in this session, but not shown here, was H. G. Feraud, executive secretary, Southern California Rock Products Assn.

Many of the subjects discussed at the various meetings also reflected the thinking in these industries. On the program were several speakers of national prominence and authorities from within and without these industries. There were also panel discussions and open forums on matters of unusual importance. Subjects covered included safety practices and awards, civil defense problems, Federal Aid in road building, the growing importance of freeways, percentage depletion, workmen's compensation insurance, the atomic energy program, sales and merchandising problems, promotion, group insurance, cost determination systems, depreciation policies, employee stock plans, the strike situation, group bargaining, enlistment of community support, business prospects, industry representation, tax problems, standardization and specifications, operating problems of various kinds, etc.

Participating at the session on cost determination were Eugene T. Halter, J. K. Davison & Bro., Pittsburgh, (left) and Paul J. Kremer, Buffalo Slag Company, Buffalo, N.Y., chairman of the session.

A major address was given by Representative W. Sterling Cole, chairman, Joint Committee on Atomic Energy.

Question-and-answer periods following each address and panel discussion and the several open forums gave everyone an opportunity to obtain information on individual problems or on developments of a more general nature. Many took advantage of this opportunity; and members participated in the open forums to such an extent that they continue to be outstanding features of these meetings.

In line with the practice in recent years, there were combined sessions of the two associations on subjects of mutual interest and separate meetings of each association at which subjects peculiar to that industry were discussed. This plan has been responsible for the wide variety of information which can be crowded into what this year was actually a 3½-day meeting. The meetings of joint interest and those of interest primarily to sand and gravel producers are covered in this article. The sessions of interest primarily or largely to ready-mix producers are reported in the CONCRETE MANUFACTURER section of this issue.

The Machinery Exhibition was also a record breaker and taxed the facilities of the hotel to the utmost. There were 104 exhibitors indoors and four in a parking lot adjoining the hotel. This far exceeded the previous record set in 1952. In other ways also the exhibits set new standards, and the knowledge that this would be the case was one reason for the record attendance. The convention programs and the exhibit hours were arranged to give everyone ample time to see the entire exhibition; and judging from the crowds everyone took advantage of this opportunity not once, but several times.

The quality and completeness of the exhibits surpassed all previous ones, and many individual exhibits were outstanding. One exhibition was a wide variety of the most important items of machinery and supplies used by these industries, either full-size or in miniature. These included screens, crushers, hammermills, dredge

A trio of N.S.G.A. directors shown here are C. A. Chipley, Fordyce Gravel Co., San Antonio, Tex.; H. V. Owens, Eastern Rock Products Co., Utica, N.Y.; and J. Rutledge Hill, Gifford-Hill & Co., Dallas, Tex. Messr. Owens and Hill are past presidents of the association.

Fred Fanning, Dallas Concrete Co., Dallas, Tex.; Robert S. Barneyback, Henry J. Kaiser Co., Oakland, Calif.; Harold M. Lacy, Gifford Hill & Co., Inc., Dallas; and Charles R. Ham, Western Pennsylvania Sand and Gravel Assn., Pittsburgh, Pa.

G. Donald Kennedy, executive vice-president, Portland Cement Association, Chicago, discussed "The Importance of Federal Participation in Road Building."

pumps and ladders, shovel dippers, crane and dragline buckets, cableway excavators, lubricants, trucks, truck bodies, bucket and tractor loaders, shovels, cranes, draglines, bins, conveyors, elevators, engines, tractors, scrapers, screen cloth and plate, sand classifiers, screw and log washers, scrapers, conveyor belts and fasteners, belt and screw conveyors, drive belts, electric motors and equipment, portable crushing and screening plants, water pumps, disintegrators, axles, ready-mix plants, weigh batchers, concrete mixers, concrete mixer and agitator trucks, concrete admixtures, heating units, scales, forms, clamps, wire rope, cable, bearings, hard-facing metals, feeders, business machines, etc.

As usual, the formal entertainment at these conventions was confined to a joint luncheon, which again attracted an overflow audience for the principal speaker. The evening reception by the associate members has been replaced by a hospitality hour each evening at which producers and manufacturers are free to mingle and make new acquaintances. Evenings were otherwise left entirely open, giving everyone an opportunity to seek his own company and entertainment, which is no problem in Chicago.

Officers and Directors The new officers of the National Sand and Gravel Association are as follows: president, John W. Murphy (Union Sand and Gravel Co., Spokane, Wash.); vice-president, Roy E. Weaver (Lincoln Sand and Gravel Co., Lincoln, Ill.); and secretary-treasurer, E. Phil Gemmer (Texas Construction Material Co., Houston, Tex.). Harold E. Bender (Azusa Rock & Sand Co., Azusa, Calif.) is the new member of the executive committee, which consists of the above officers and the following: Robert H. Baker (Dixie Sand and Gravel Corp., Chattanooga, Tenn.); E. K. Davison (J. K. Davison & Bro., Pittsburgh, Pa.); and Howard W. Jordan (Metropolitan Sand and Gravel Corp., Port Washington, N. Y).

A new director at large is Irving Crown (Material Service Corp., Chicago, Ill.). Re-elected as directors-at-large were: Robert S. Barneyback (Henry J. Kaiser Co., Oakland, Calif.); Charles E. Brady (B. V. Hedrick Gravel and Sand Co., Lilesville, N. C.); J. Paul Calhoun (Consolidated Gravel Co., Inc., Columbus, Ga.); and C. A. Chipley (Fordyce Gravel Co, San Antonio, Tex.).

Business Prospects A feature of the meeting was a symposium on business conditions for the sand and gravel and ready-mixed concrete industries, in which ten leading producers from various sections of the United States expressed views as to business prospects in their areas for 1954. The general conclusion reached was that sales this year would at least equal if not slightly exceed those of 1953, which itself was considered a banner year. This optimism was expressed in spite of some types of construction getting off to a slow start in certain areas. Of the areas reported, only southern California is expected to exhibit an appreciable decline—estimated to be about 10 percent.

On the other hand, certain areas are anticipating exceptionally good years. For example, one Southern producer looked upon the far South as an economic frontier which would undergo important industrial growth. A north central producer reported that the Williston oil basin in North Dakota and the new taconite mining developments in Minnesota are boom areas, which are spurring construction and hence the use of aggregates. Because of its relative newness, the ready-mix industry in the Chicago area is expected to continue at high production levels. The outlook in the New York area is also good, based upon continued urban expansion and development projects.

The producers also looked for 1954 to be a year of challenge. Greater competition is anticipated in all areas, which may ultimately result in tighter pricing conditions. Coupling this with higher operating and labor costs, the producers predicted that profits would probably decline even though sales would remain at high levels. Many producers felt that the increased competition would benefit the industry as a whole, since it would place a premium on increasing operating efficiency, producing high-quality products, and providing topnotch service to customers.

Harrison R. Baker, California Highway Commission, Pasadena, and Robert Mitchell, Consolidated Rock Products Co., Los Angeles. Mr. Baker discussed the Los Angeles Freeway Program.

Coming Conventions It was announced that the 39th annual convention of the National Sand and Gravel Assn. and the 25th annual convention of the National Ready Mixed Concrete Assn. would be held in Miami, Fla., January 9 to 13, 1955. There will be no headquarters hotel as such; all convention sessions will be held in the Miami Auditorium on Biscayne Boulevard close to the recommended hotels, which are the Columbus and the McAllister.

The 1956 joint annual convention and biennial show will be held at the Conrad Hilton Hotel in Chicago February 13 through 17. The 1955 mid-summer directors' meeting will be held at the Manoir Richelieu, Murray Bay, Quebec, during the third week of August.

Manufacturers' Division The Manufacturers' Division of N.S.G.A., including associate members of both associations, met on Sunday afternoon preceding the convention to discuss exhibit plans for 1956 and subsequent years. At a later luncheon meeting Robert P. McKenrick (Blaw-Knox Co.) was elected chairman of the division, replacing Emery M. Heuston (Bucyrus-Erie Co.). W. A. Rundquist (Pioneer Engineering Works) was appointed a vice-chairman, succeeding Mr. Kenrick. The new member of the board of directors is Robert W. Hernlund (Western Machinery Co.). Mr McKenrick joins Mr. Heuston and R. D. Ketner (General Electric Co.) as a representative of the division on the N.S.G.A. board.

President's Address In his welcoming address the first morning of the convention, President Albert A. Shiely (J. L. Shiely Co., St. Paul, Minn.) sounded the note of optimism and confidence which was the keynote of this convention. This convention, he said, was the best in N.S.G.A. history from any standpoint; and he indicated that the association is healthy, financially sound, and doing its job for the industry. Its membership has reached a record high of 249 active members and 84 associate members, but much can still be done. Mr. Shiely briefly mentioned some of the most important work done by the association during the last year, and some of the important national developments affecting the industry.

We as a people became great, said Mr. Shiely, because we were a free people, striving for security and happiness; but in the last decade we have seen our leaders in Washington selling the people: (1) security as a substitute for happiness, (2) stability as a substitute for progress, and (3) statism as a substitute for liberty.

He analyzed these false doctrines as follows:

"First, security—If security was a substitute for happiness, then the happiest people in the world would be in jail, for certainly they have the ultimate in security. It is not security, but the striving for security, that makes one happy. The satisfaction of a job well done, the satisfaction of accomplishment, the overcoming of obstacles, and the looking forward to accomplishing greater things gives one true happiness. This country was not built by men who had security. No group could have been more insecure than our Founding Fathers. Man is a lazy and a selfish animal. Give him security, and he will not work either his body or his mind.

"Now let us look at stability as a substitute for progress—No economy can ever be stable. It either goes ahead or it goes backward. Many nations down through history have striven for stability by controls, and in every recorded case it has accelerated the slippage. Only by keeping the door of opportunity open and the spirit of incentive alive can we get progress.

"Now as to statism at the expense of liberty—What have we seen happening? Our people have been persuaded to turn from their heritage and swallow the doctrine of security guaranteed by the government. Its advocates have passed law after law, established bureau after bureau, hog-

R. P. McKenrick, Blaw-Knox Co. (left), newly-elected chairman of the N. S. G. A. Manufacturers' Division, receives congratulations from E. M. Heuston, Bucyrus-Erie Co., retiring chairman.

tied us in red tape, and handcuffed us with taxation. They have tried to give us total security, forcing free enterprise to shut up shop. And where they did not legislate it out of business, they have gone into business in competition with it. Fortunately, the new administration is trying to reverse the trend; but they must have our help. Parties are kept in power by the will of the people, and it takes courage to compete with Santa Claus."

This problem, said Mr. Shiely, is everyone's problem, and we must all make it our business to sell America to our children and grandchildren. We are, he said, the only country left in the world operated on democratic principles, with high standards of living, and with opportunity for a youngster to get to the top. If we don't sell America to the next generation, he warned, someone will sell them something else.

Ahearn's Address Vincent P. Ahearn, executive secretary of both associations was not a scheduled speaker, but by popular acclaim was induced to give his resume of conditions and prospects, a feature which has become such an important part of these meetings. He commented on the fact that the rapid increase in our population—which is expected to increase from the present 160,000,000 to about 200,000,000 in 1980—not only means much to business but also creates many problems. One of the most serious problems is water supply, not only in southern California but in many other sections of this country. Another is the rapid depletion of our mineral reserves, especially of nonmetallic minerals. From 1914 to 1952, said Mr. Ahearn, this country alone used more minerals than all the rest of the world has used in all civilized history. Another problem, as people live longer, will be that of old-age financing.

In commenting on the present administration Mr. Ahearn said that President Eisenhower has a tremendously difficult job but that he has unprecedented prestige and the confidence of the people. This confidence is based largely on respect for his sincerity and good intentions, and his obvious consecration to his duties and his oath of office. The mistakes that have been made, said the speaker, only make him human. Vice-president Nixon, he said has assumed new stature and has the President's full support. The President's biggest worry, according to Mr. Ahearn, is the decline in business, which has no real justification. Unlike Republicans in the past, he intends to do something about unemployment.

In closing, Mr. Ahearn said that the death of Senator Taft was President Eisenhower's greatest loss. His appointment of Mr. Durkin as Secretary of Labor was his greatest mistake. The United Nations speech was his greatest as it re-established our prestige in world affairs. The cutback in military expenditures was his most courageous act. Mr. Eisenhower, he said, will run again in 1956 and predicted that he will be re-elected.

Directors' Meetings At the meeting of the N.S.G.A. board of directors, which opened the convention on Monday morning, a number of items were discussed which are of general interest to members and to the industry in general. Stanton Walker, director of engineering, said that at the last concrete and aggregates Short Course the registration totalled 137. This, he said, is too many for a good job, and at the next course either the registration must be limited or the course must be held twice. A policy has also been adopted, said Mr. Walker, of getting out fewer but larger and better publications—books instead of circulars. Two now proposed publications are on the proportioning of sand and gravel for concrete mixes and on the treatment of specifications and test methods as applied to mineral aggregates. It was also decided to transfer one of the two association fellowships to Purdue University for one year.

The directors also voted to conduct an annual sand and gravel economic study similar to the one conducted by N.R.M.C.A. for the ready-mix industry.

At this meeting Vincent P. Ahearn, executive secretary of N.S.G.A., told of a proposed new drivers' manual

Leo Bunds posing by the Rock Products trophy won by the Eliot plant of Pacific Coast Aggregates, Inc. at Pleasanton, Calif., in the Class A division of the N.S.G.A. safety contest.

for the sand and gravel industry to be patterned after the one to be issued by N.R.M.C.A. The board voted to go ahead with this manual. He also discussed briefly pending federal and state legislation of interest to the sand and gravel industry on such subjects as water and air pollution, restrictions in mining claims on public land, rehabilitation of worked-out land, etc.

With respect to industrial radio, Mr. Ahearn said that trucks delivering sand and gravel in cities are ineligible, but ready-mix trucks are eligible. There is, he said, a fair chance that users of intraplant and ship-to-shore radio stand a fair chance of keeping it.

At the joint luncheon with the N.R.M.C.A. board of directors which followed, Mr. Ahearn and Mr. Walker gave brief resumes of association activities affecting both industries.

Safety Contest Much of the first morning's meeting was devoted to presentation of safety trophies to the winners of the 1952 N.S.G.A. safety contest and to discussion of the safety policies of the winning companies. This meeting was ably presided over by J. Rutledge Hill (Gifford-Hill & Co., Dallas, Texas). The winner in Class A—plants operating more than 100,000 man-hours during the year—was the Eliot No. 104 Plant, Pacific Coast Aggregates, Inc., Eliot, Calif. The Class B winner—50,000-100,000 man-hours—was the West Des Moines plant, Concrete Materials Company, Des Moines, Iowa. The winner in Class C—less than 50,000 man-hours—was the Bennett plant, Thomas Gravel Company, Bennett, Texas. Each was awarded a safety trophy provided by Rock Products. In this contest 37 other plants had accident-free records and won N.S.G.A. Safety Award Certificates.

A representative of each trophy-winning plant accepted the trophy from President Shiely and described the safety policies and methods of his company.

The representative for the Eliot plant of Pacific Coast Aggregates, Inc. was Leo Bunds. He stated that no safety program can be a success without the leadership and example of top management such as his company has, and that no trophy will ever be won without full teamwork from management, the safety engineer and the last fellow on the payroll.

The Class B trophy for the West Des Moines plant of the Concrete Materials Company was accepted by

The West Des Moines, Iowa, plant of Concrete Materials Co. won the Rock Products award for Class B in the N.S.G.A. safety contest. Shown here are Fred E. Bellamy, president, and Walter Barnett, plant superintendent of the winning plant.

Walter Barnett, plant superintendent. Fred E. Bellamy, president of the company, gave a report on the company's safety policies in the absence of W. W. Roberts, production manager. He said that two years ago company officials were rudely awakened to the fact that something would have to be done as lost time and minor accidents were occurring in ever-increasing numbers. In order to reverse this trend it was necessary to make every employee more safety conscious and it was finally decided to create competitive interest between the plants.

The Class C Award for the Bennett Plant of the Thomas Gravel Company was accepted by W. R. Thomas. He said that management on all levels of his company has long recognized that safety pays dividends in many ways, and that it is the responsibility of management. The first endeavor was to provide safe working places. The next was to find ways and means of eliminating physical exposures.

In this program the prevention of injury and suffering to the employees was the primary objective. It was also realized, said Mr. Thomas, that in order to obtain efficient production waste must be eliminated, and accidents caused waste in the form of lost time, of dollars in the training of new men, in operating short handed, in increased insurance costs, etc. To prove that safety pays dividends Mr. Thomas cited the outstanding records of three of the company's plants.

In the discussions which followed the presentations and reports it was suggested that the association have movies taken at the plants of safety trophy winners so that other producers can use them in their own safety efforts. Another producer advised using common-sense methods and stressing the importance of safety to the employee and his position with the company. Truck drivers, he said, are the worst offenders and they get special attention. All drivers are made to take the local driver tests and this deflates many egos and eliminates many unsafe drivers.

Atomic Energy One of the major highlights of the convention was a national address given at the Joint Luncheon by Representative W. Sterling Cole (R., N.Y.), chairman of the Joint Committee on Atomic Energy, on the military aspects of the atomic energy program. Because of its outstanding importance, the speech was given nationwide coverage by the newspapers, radio, and television.

W. R. Thomas of the Bennett plant of Thomas Gravel Co., Birdville, Tex., winner of the Rock Products award for the Class C division of the N.S.G.A. safety contest.

Representative Cole reported that both our atomic and hydrogen weapons programs were progressing more rapidly than expected, although for security reasons, he was unable to indicate the extent. However, he pointed out that an entire "family" of hydrogen weapons, which would be comparable in versatility to today's fision weapons, is within the realm of possible development.

The speaker next stated that the best means of preventing nuclear war lies in maintaining and even increasing the strength of our retaliatory striking forces. However, he pointed out that this must be supplemented by a strong continental defense system which could cripple and repel a hostile air fleet. He therefore called for acceleration of our efforts to improve our defenses through extending the range and accuracy of our radar detection system, expanding and improving our interceptor squadron, and producing a vast amount of anti-aircraft missiles and rockets.

In line with the latter, the representative mentioned the possible use of small-size atomic weapons adapted to anti-aircraft defense, which could destroy entire fleets of invading aircraft.

Legal, Tax, Insurance Developments

Percentage Depletion J. Rutledge Hill (Gifford Hill & Co., Inc., Dallas, Texas) presided at the Wednesday morning session on percentage depletion and similar problems. In his opening address he stressed the vital importance of percentage depletion to the sand and gravel industry, stating that without it many producers would not be able to survive. Every ton of sand and gravel produced, he said, is that much less for the future. In his contacts with congressmen in working for percentage depletion Mr. Hill has become firmly convinced that they are interested in the problems of business and want to know the facts affecting any proposed legislation.

The next two speakers were producers who told of their own experiences and those of other companies with percentage depletion. Paul J. Kremer (Buffalo Slag Co., Inc., Buffalo, N. Y.), said that next to the excess profits tax percentage depletion requires the most involved accounting. It is also, he said, the only method by which wasted assets can be recovered. He then referred his listeners to the booklet sent out by N.S.G.A. to its members in 1952. This pamphlet, he said, gives the basic facts about percentage depletion and is simple but complete. He then briefly enumerated the requirements for eligibility for percentage depletion.

According to Mr. Kremer, the small producer has the most serious problem in connection with obtaining percentage depletion as he has available less accounting talent, and part-time accountants usually do not understand all its complexities. Larger producers, he said, usually have, in their organizations or available to them, a man who is more familiar with the subject. This he gave as the reason why so many small operators have not taken the benefits of percentage depletion. They have until March 15, 1955, to apply for a refund on their 1951 taxes—the first year for which this benefit was available. He told of one producer who recently filed and got a refund on taxes already paid. Many go astray, on excess output deduction; and the speaker advised his hearers to look this up on page 1, line 17, of the N.S.G.A. booklet. New York state, said Mr. Kremer in closing, accepts the government's procedure of figuring depletion in determining state taxes.

John W. Murphy (Union Sand and Gravel Co., Spokane, Wash.), told of the methods employed by his company in applying the principle of percentage depletion. He said that the sand and gravel industry has now had this benefit for three full taxable years but that apparently many producers are not taking advantage of the provisions of this law who are definitely entitled to do so. It is practically certain, he said, that their lack of proper information is causing them to pay extra income taxes. One fairly large operator in the Northwest employed outside auditors who had never heard of percentage depletion. Other accountants have heard of it but have not taken the trouble to study thoroughly the provisions of the law and regulations and so give incorrect advice. He advised owners of sand and gravel operations to become familiar enough with the law so that they can discuss it intelligently with their counselors, to the end that an intelligent decision can be reached.

Richard K. Humphries, Pacific Coast Aggregates, Inc., San Francisco, discussed his company's employee stock plan.

Before telling how his company handles percentage depletion Mr. Murphy briefly reviewed some of the significant provisions of the law. In simplified form they are as follows:

"(1) A sand and gravel producer under many, and indeed most conditions, may take the 5 per cent percentage depletion even if he does *not* own the land upon which he operates.

"(2) The tax deduction for percentage depletion is based on your gross income from the property and not on the cost or other basis of the land. If you are entitled to percentage depletion, you are able to take it even if your land has been completely depleted by cost or other depletion.

"(3) You are always in any given year permitted to take the larger of percentage depletion or cost depletion. It is not necessary to make any formal election as to which method you wish to use, and the method may be changed each year if that would be advantageous to the producer.

"(4) Percentage depletion gives the producer a definite incentive to run a profitable operation, as the amount of allowable percentage depletion may not exceed 50 percent of the net income from the property. Thus, if your net income from a given sand and gravel operation is low, you are apt to lose a part of your percentage depletion allowance. Cost depletion, on the other hand, does not have the 50 percent limitation."

In describing its handling of percentage depletion Mr. Murphy explained that the Union Sand and Gravel Co. is an operating company, a partnership composed of three partners. It operates entirely on leased ground owned by a corporation which is an operating ready-mixed concrete company composed of three stockholders—the same three partners. The books of both organ-

izations have not been audited since the 1951 return, which was the first one including percentage depletion deduction. This, Mr. Murphy stated, seems to be the condition throughout most of the industry. He said that as these audits are made and as the various companies gather experience on the current thinking of the Internal Revenue Service, it would be helpful if the association office were notified. A file of cases could be built up to standardize computation procedures.

What his company has done, said Mr. Murphy, was done only with the firm conviction that it could successfully be defended with an Internal Revenue agent. The first problem encountered was the lack of a written lease, a situation which has been corrected. Some of the material sold is delivered by trucks, and the balance is sold f.o.b. the customer's trucks or rail car; in the latter case the customer always pays the freight. In setting up the gross sales figure the delivery charge on deliveries made in company trucks is not kept separate. Thus, the gross sales figure used in the percentage depletion calculation includes delivery charges to customers.

The company has for many years kept delivery costs, and this is slightly more than the actual charge made for delivery. This figure is used and is believed to be defensible. As regulations require, the land royalties paid by the company are deducted from the gross income from the property. At one of the two gravel plants crushed rock is made from oversize gravel over 2 in. in size, and the cost of this crushing is not deducted as there is no commercial market for the large material. Some of the sand is deficient in fines and is blended with a finer sand. No deduction is made for the cost of blending. In order to supply ready-mix plants in freezing weather sand and gravel must be stockpiled and allowed to drain. Mr. Murphy's company does not deduct the cost of this storage and reclaiming.

In closing, Mr. Murphy emphasized the importance of taking deductions for the maximum amount that can be reasonably and logically justified. If the figure is wrong, all that is lost is some interest on extra income taxes.

In the discussion which followed it was made clear that any producer with a complicated setup must have competent legal advice. River operators are advised to check carefully to see if they have an economic interest in the deposit before passing up percentage depletion.

Delmar L. Bloem, assistant director of engineering, N.S.G.A.-N.R.M.C.A.

Taxation Problems Following these reports on percentage depletion, John T. Sapienza, counsel for the two associations, briefly discussed the present legislative situation. He said that there is under consideration a revenue revision bill which is intended to be non-partisan and non-controversial, but which provides for many changes. With respect to percentage depletion, however, no major changes are expected. A few minor changes are possible, including the addition of gypsum and a few other minerals not now getting these benefits. The special problems of the oil and mining industries are being given further study before any recommendations are made by the Treasury Department. He urged all producers to be on the alert for any efforts to restrict the benefits they have been granted, and to be ready at all times with facts and figures to substantiate their claims.

Mr. Sapienza then briefly described the drastic reorganization and decentralization of the Internal Revenue Service. There are now nine regions, each with its own commissioner, who has many of the powers formerly confined to the main Washington office. Formerly, he said, percentage depletion returns had to be reviewed in Washington, but on November 25, 1953, a ruling was issued that, effective December 1, 1953, all reports would go to the regional offices for review and final checking by revenue agents. It is in these offices, said Mr. Sapienza, that the battles will be fought.

With respect to the Revenue Act of 1951, he stated, many returns for 1951 have not yet been examined. There are two cases now in court which will be tests on highly controversial features of the Act. In one of these the Service contends that clay brick is a marketable product but not a nonmetallic mineral product, and so the cut-off point should end with the preparation of the raw material. The other case, also in the clay brick industry, involves end use. It involves a manufacturer who sells some of the raw clay produced but uses the bulk of it in his own plant. These cases and others to follow, said Mr. Sapienza, will establish precedents and will also give producers a basis on which to determine their own procedures. A careful record of all cases is being kept. He again advised producers in their returns to take all they think they are entitled to and to resolve all reasonable doubts in their own favor. Mr. Sapienza also stressed the fact that any producers who have not yet applied for percentage depletion for 1951 still have time to do so. The statute of limitations permits application usually within 3 years after the due date of the return or within 2 years after payment of the tax for that year, whichever is the latest. He also advised producers on many other problems which might arise in connection with percentage depletion.

Mr. Sapienza also explained some of the provisions of the proposed new Internal Revenue Code which involves 200,000 man hours of work. The old code, he said, has been rewritten, revised and simplified. Depreciation has been a source of great controversy with Internal Revenue agents and three changes are proposed. One would authorize taxpayers to use a declining balance—this would mean using double the present rate of depreciation but applying it to the declining balance and would make about two-thirds of the investment available after 5 years for reinvestment. Taxpayers and I. R. agents would be authorized to enter into agreements on rates and life. Lastly, if a taxpayer selects a life within 10 percent of I. R. idea it is acceptable.

Another proposal of interests, said Mr. Sapienza, is in the provision on net operating loss. There is now a carryback of 1 year and forward 5 years. This would be changed to 2 years backwards and 5 years forward or a total of 8 years to recoup losses. Expenditures for research and development could be written off in the year incurred or over a period of 5 years or more.

Compensation Insurance *The Mounting Cost of Workmen's Compensation Insurance Rates and What the Employer Can Do About Them,* was the subject discussed by Theodore C. Waters, counsel for the National Industrial Sand Assn. He first gave a brief history of this form of insurance which originated in Germany, then went to England and later to this country, where it spread to every state. The various state laws are not uniform and differ in nearly every detail, but they all set a ceiling on the liability of the employer and insure the worker assured and adequate compensation.

The original aim of such compensation, said Mr. Waters, was to cover accidents; but it has now been extended to occupational diseases in all states but two. There is a wide variation in these states—27 providing general coverage, which can include nearly everything, and 19 scheduling lists of compensable diseases. Such legislation, he said, was not originally intended to cover natural disabilities. Now the wage loss has become secondary, and the extent of disability is becoming more important. The general tendency, Mr. Waters indicated, is to increase the cost of compensation. This trend is due to three factors: (1) legislative amendments increasing benefits; (2) court interpretation of term injury instead of wage loss; and (3) failure of employers to provide adequate means of preventing accidents and disease.

Mr. Waters stated that the very word silicosis was once a red flag, and insurance companies refused to carry it except at prohibitive added premiums. This problem has now been solved, and there is no overriding rate for silicosis. The important development now is the impairment of hearing due to industrial noise. This, he said, is already a problem in many states and is a subject for national concern. All producers should be alert to further developments. Suits on loss of hearing are difficult to defend, Mr. Waters pointed out, due to the lack of records on the employees and to the small amount of actual information now available on this subject. In a New York court recently an award was made to an employee although he lost no time from work and continued to work on the same job. This threat, said Mr. Waters, is spreading like wildfire. The best defense of the employer is to take all possible steps to prevent injury and disease. Top management must not only make the necessary rules but must also enforce them and must show a personal interest in the welfare of the employee in order to win his respect and confidence. Labor and the public, Mr. Waters declared, are demanding drastic reduction in injuries, and management will continue to pay the cost of neglect.

Ken Tobin, assistant executive secretary and group insurance administrator, N.S.G.A.-N.R.M.C.A.

Group Insurance At a joint session on group insurance, Donald Shepherd, John Hancock Mutual Life Insurance Co., discussed *Advantages Offered by the Group Insurance Plan of the Two National Associations.* The plan went into effect April 1, 1953, for the N.R.M.C.A., and a month later for the N.S.G.A. At the time of the convention about 30 member companies were enrolled in the plan.

Of the numerous advantages of the plan outlined by Mr. Shepherd, the major one concerned the availability of the plan to all companies regardless of size. He pointed out that 80 percent of the companies enrolled would not have been able to apply for group insurance elsewhere because of their small size. Other advantages cited included the following: medical examination not required; no restriction on age of employees; and coverage available to all full-time employees, including office staff. In addition, the plan saves time and money for the company, since the association staff handles the necessary paper work. The speaker also pointed out that the plan helps build employee morale, since it represents a fringe benefit in which the company absorbs the cost.

Under the plan, $5,000 life, accidental death, and dismemberment insurance coverage is available to active officers, partners, proprietors, and executive assistants (including superintendents, department heads, and chief engineers); and $2,000 coverage is available for the remainder of the company personnel. The policy also covers hospital, surgical, polio, and in-hospital medical benefits. The speaker reported that this coverage (excepting life insurance) is also available to employees' dependents for nominal extra cost, which can be paid by the company or by the individual employee.

Mr. Shepherd also announced that his company is now offering a pension plan for member companies of the two associations.

The First Year of the Plan was discussed by Kenneth E. Tobin Jr., association assistant executive-secretary and group insurance administrator. He reported that about 750 employees are now covered by the plan, 20 percent of which are in Class I ($5,000 coverage). He indicated that the insurance carrier will restudy the age range in the near future in order to establish new premium rates. According to the speaker, the claim service has been excellent; in most cases claims were being paid within a day after receipt. He pointed out that in the first year of the plan, 25 percent of the premiums collected covered claims. In conclusion Mr. Tobin emphasized that one distinct advantage of the plan is that the employee covered has a definite equity, which is not true of many union insurance plans.

In his talk on *Application Of The Taft-Hartley Act To Group Insurance and Pension Plans,* W. Crosby Roper Jr., counsel for the two associations, reported that there is a surprisingly small number of decided cases dealing with the many potential problems in this field. Many of the difficult legal problems are still to be resolved.

However, he discussed one case stating that health, welfare, and pension plans are proper subjects for collective bargaining. Thus if an employer wants to institute such a plan or to change an existing plan, he must consult the union or else run the risk of a charge of refusal to bargain. Similarly, if the initiative comes from the union, the employer must bargain with respect to the union demands.

Mr. Roper then offered some practical suggestions to employers in connection with negotiation on such matters as the following: (1) Get your unions to agree to long-term contracts covering these plans. (2) Make the contract broad enough to cover the whole field. (If you don't, you may find that although you agreed upon a pension and medical

Left to right: L. A. Kesmore, Buffalo Gravel Corp., Buffalo, N. Y.; Harry A. Barney, Barney & Dickenson, Binghamton, N. Y.; Carlton J. Lewis, Buffalo Gravel Corp., Buffalo; T. J. Rodgers, Federal Portland Cement Co., Buffalo; Stearns E. Warner, Lehigh Portland Cement Co., Buffalo; and Ernest M. Hammond, Gravel Products Corp., Buffalo.

expense plan this year, the next year the union may be back asking for a disability benefit plan or paid sick leave.) (3) In providing benefits like Blue Cross, make your contract provision flexible enough so that reasonable changes can be made in the plan without requiring contract modification. (4) On the other hand, if you are dealing with a primarily union plan, try to make your contract provision tight enough so that there are reasonable limitations on changes in benefits and especially over additional costs arising from changing circumstances.

Continuing on the subject of union negotiations and contracts, Mr. Roper urged employers to become familiar with Section 302 of the T-H act, which is a criminal provision, wilful violation of which is punishable by fine of not more than $10,000 and imprisonment for not more than a year; this fact should be considered if you are being pressured by a union to disregard some of the restrictions contained in the section, he warned.

Severance Tax A problem of great potential significance was discussed by Harold M. Lacy (Gifford Hill & Co., Inc., Dallas, Tex.), in his paper entitled *An Examination of the Severance Tax Problem.* He reported on a recent survey conducted by the N.S.G.A. which revealed that three states (Arkansas, Louisiana, and West Virginia) already have a severance tax on sand and gravel; the current rates are ½ cent per ton, 3 cents per ton, and approximately 8 mills per ton, respectively. (A fourth state is Arizona, which has a tax based on 1 percent of the selling price of all mined products.)

Mr. Lacy warned that there is a possibility that every state will eventually adopt such a tax, in view of the fact that new sources of revenue are constantly being sought. He indicated that a number of states, including Mississippi, Texas, Ohio, Oklahoma, Pennsylvania, and Tennessee, have already considered the tax, but that in all cases the tax bill was never passed.

Because of the danger facing the industry, Mr. Lacy urged producers to make positive efforts to defeat future proposals. He recommended that various lines of argument be used in attacking the problem. For example, purchases made by the federal, state, and local governments, which are the sand and gravel industry's biggest customers, would represent a tax upon a tax, with the various branches of the government paying most of the tax. Another argument is that the effect of a severance tax would be to curtail the highway program of the state and other public work to the extent of the tax which is imposed. On the other hand, if public work is exempt, then the revenue derived from severance tax (on private work) will not be sufficient to pay for the collection and administrative expenses.

The speaker then pointed out that if a tax appears inevitable, then it should be the industry's purpose to broaden the base of the tax so that the burden on the industry will not be so great. To do this, the tax law should include not only sand, gravel and crushed stone as it is generally accepted, but also lightweight aggregates, rip rap, agricultural limestone, granite, clay and shale, and other minerals.

In addition, he said that the only possible way for a severance tax to be equitable is on a dollar value rather than on a unit basis; because of the difference in the values of these various materials it would be a serious inequity to tax all products on either a ton or cubic yard basis, he said.

Merchandising and Cost Determination

Merchandising Merchandising sand and gravel was considered at the session presided over by Charles E. Brady (B. V. Hedrick Gravel & Sand Co., Lilesville, N.C.), an N.S.G.A. director. The chairman discussed the use of standard sales agreement forms. Quentin W. Best (Consolidated Rock Products Corp., Los Angeles) and Robert F. Porter (Harry T. Campbell Sons Corp., Towson, Md.) reported on methods of compensating salesmen. Stanton Walker discussed current trends in specifications from the viewpoint of marketing sand and gravel.

Every producer should use a written quotation and a formal sales contract, Mr. Brady urged the group. These serve to spell out clearly just what the sand and gravel firm is committed to and obligated to perform. The formal sales agreement protests the producer from the vagaries of the customer and prevents later unpleasantness because of misunderstandings in the terms of the sale.

By the same token, every producer should have a formal company sales policy, Mr. Brady said. This should cover expenditures for entertainment, promotion, gifts, etc. And it should keep the sales force informed as to what the company expects and allows. The wise producer also spends time and effort creating good will for himself among those employees of his customers who actually use his materials, the chairman warned.

In discussing the three basic methods of remunerating salesmen, Mr. Best emphasized the advantages of the straight salary method over the commission and salary-plus methods. Both the salesman and the producer benefit in a straight salary arrangement, he said, for it makes the salesman one of the "team"—able and willing to understand the company policies and objectives under changing circumstances, rather than a lone wolf interested only in these accounts that are ripe here and now. Straight salary results in better performance on the part of the sales-

Bernard Johnson, Estherville Sand and Gravel Co., Estherville, Iowa; Ben Smilg, American Ready Mix Corp., Dayton, Ohio; Maurice W. Boggess, Estherville Sand and Gravel Co.; and M. C. Evans, Becker County Sand and Gravel Co., Cheraw, S. C.

Left to right: Fred Price, Stockport Sand & Gravel Co., Stockport, Ohio; Frank A. Bingham, American Aggregates Corp., Greenville, Ohio; and Ralph B. Burns, Muskingum River Gravel Company, Zanesville, Ohio.

man and better service to more customers. Yet it permits the company management to control policies and objectives and to shuffle clients and territories without complaints from the salesman.

Make a good product—then promote and sell it! That is Mr. Porter's formula for success. Hire bright young men for your sales force. Train them thoroughly on the production side before sending them out to sell. Pay them decently so that they can look right and feel right. Give good transportation. Let them spend money on their customers judiciously. Guide their efforts and where needed, back up their plays.

The sales executive in the sand and gravel firm must set the objectives, guide the firm towards them, and all the time provide the "spark" needed to keep the sales force on the ball, Mr. Porter advised. Never forget—and never let your salesmen forget—that you are in partnership with your customer, and work accordingly. Every phase of the sand and gravel operation—even the voice that answers your telephone—has a bearing on your sales effort, he emphasized.

Discussing the many and varied uses to which sand and gravel is put, Mr. Walker warned that specifications are becoming more standardized and are growing increasingly more rigid, especially in building sands. Railroad ballast had declined as a market, possibly because the sand and gravel producer hasn't paid sufficient attention to it, he said. Bituminous mixtures are a growing market, according to Mr. Walker, who urged that the producers become better acquainted with it.

There are a large number of specialty uses for sand and gravel, the reported, but for the most part their requirements are so rigid and so specialized that the average producer is in no position to serve this market. Glass sand, foundry sand, abrasive sands, filter sands and gravels and some for the chemical and metallurgical fields provide an attractive market for the specialist whose products meet these stringent qualifications.

Current developments governing grading of sizes, crushed particles, deleterious particles, chemical reactivity, and other characteristics of the sand and gravel were outlined by Mr. Walker. The growing concern with flexural strength (with some airport construction now calling for as much as 700 p.s.i.) was discussed.

Cost Determination, Depreciation In view of the growing complexity of business and economic problems making accounting more important than ever, the association presented a stimulating session on the development of cost determination systems, including sound depreciation policies, at which chairman Paul J. Kremer (The Buffalo Slag Co., Buffalo, N. Y.); John W. Murphy (Union Sand and Gravel Co., Spokane, Wash.); and Eugene J. Halter (J. K. Davison & Bro., Pittsburgh, Pa.), presented important papers.

Mr. Kremer reported that his company has been using a basic cost determination system for over 20 years, and that it has paid dividends in many respects. In this system, the operation (sand and gravel) is broken into major cost centers, including stripping, excavation, transportation, crushing-screening-washing, storing-reclaiming, and general (or service); these represent cost centers at the operating level and do not include general office, sales, or administrative expenses. The general department includes superintendent's salary, plant office expense, taxes, fire insurance, depreciation, and other similar expenses.

According to Mr. Kremer, the use of such a system gives the producer a complete view of the operation from a cost standpoint, not only as it functions today but as it will look tomorrow under a variety of changing conditions.

He stated that the future of every business depends upon four basic factors: (1) Status of business today, compared with competitors and with the industry in general; (2) cost picture; (3) break even point; and (4) Where would you be, and what would you do, if selling prices dropped x percent, if volume dipped y percent, or if your operating costs climbed z percent?

On the subject of depreciation, Mr. Kremer discussed a recent survey conducted by the Empire State Sand and Gravel Assn. on the depreciation practices of its member companies. Results of the survey show that 22 companies use the straight line method of computing depreciation, two companies use the unit of product, that is the number of tons or yards of product, and only four use the declining balance method. Fifteen start taking depreciation on the date equipment is acquired, nine from the first day of the month in which equipment was acquired, and five take one-half year's depreciation in the year acquired regardless of what date in the year it was acquired.

Mr. Kremer reported that the rates are pretty much "all over the lot", that is, some company would write off a washing and screening building in five years, another in 20 years. The variation depends upon

A trio of Pacific Coast Aggregates, Inc., conventioneers include Vaughn R. Horstmann, Jesse D. Kaufman, and Leo Bunds.

Russell Thorstenberg, Thorstenberg and Tamborello, Houston, Tex., and George G. Smith, Texas Construction Material Co., Houston, Tex.

a number of circumstances, he indicated.

Mr. Kremer next reported that a new liberal depreciation policy has recently been announced by the Commissioner of Internal Revenue. Accordingly Bulletin "F" of the Treasury Department (last revised in January, 1942), which covers *Depreciation and Obsolescence, Estimated Useful Lives and Depreciation Rates,* will now only be used as a rough guide instead of a "bible"; now the Revenue Service will substitute a test of reasonableness for the former strict reliance on Bulletin "F". Also, the taxpayers will be given the benefit of any doubt within reason as to depreciation rates.

In his paper John W. Murphy stressed the absolute necessity for a cost accounting system, outlining the many benefits that will accrue from an adequate system. At the outset he indicated that cost accounting is *not* a method of bookkeeping but is a method of operation that originated when operating personnel met inadequacies or inefficiencies in machines or material, causing costs to accumulate at certain stages of the manufacturing process. The recognition and solving of these problems resulted in smoother and more efficient production.

In order to be of any value, the cost system must produce tangible results. To be of maximum value, the speaker emphasized that cost figures should be analyzed carefully by management as soon as they are prepared for a given period.

According to Mr. Murphy, the principal value of a good cost system is to help top management do its job of intelligently running a business. Necessary decisions on future policies and future operations of the company must be based on fact, which are excellently provided by cost accounting.

In the various operating departments, the cost accounting system can help with such problems as whether or not to do your own stripping, whether to switch to new and larger excavating equipment, whether to use mobile equipment or conveyor belt for intraplant transportation, etc.

Cost accounting also checks on the efficiency of the maintenance policy of the operator. The system also gives assistance in deciding what type of equipment is best suited for given conditions. Adequate cost records will also help management make the relatively difficult decision involving purchase of new equipment, rebuilding old plants, and purchase of new plants.

In addition it is important in helping the superintendents to make lesser decisions within the various operating departments—such decisions as whether a foreman is operating a certain department economically and efficiently. It helps the superintendent or owner to locate the trouble spots and to correct them. Without an adequate cost accounting system, you may not know the problem exists.

Cost accounting is also valuable in labor negotiations; it is certainly most helpful if management knows that a requested x cents per hour increase for a certain craft, or the granting of fringe benefits, more paid holidays, etc., is equivalent to x cents per ton cost increase. Adequate cost records are essential if such a computation is to be made.

E. J. Halter discussed the cost accounting system used by his company, J. K. Davison & Bro., Pittsburgh, which produces about 1,000,000 tons of river sand and gravel and 50,000 cu. yd. of ready-mixed concrete annually. According to Mr. Halter, competitive conditions today, together with information needed to comply with ever increasing governmental requirements, have more or less brought general accounting procedures and costing principles to the forefront.

The speaker reported that at his firm cost statements are prepared on a quarterly basis, which is believed ample considering the seasonal nature of the business. Cost centers, or prime divisions of costs, are dredging, river transportation, hoisting, binning and weighing, cement handling, general yard, testing, service departments, truck transportation, and office, sales and administrative expense. Under the classification of "service departments" are accumulated expense of garaging and servicing trucks, operation of hoist boats, and carpenter and repair crews, each of these being allocated to prime divisions of cost based upon operating reports furnished by each service department. Sub-divisions of each cost center are labor, utilities, fuel, supplies, compensation insurance, payroll taxes, food and kitchen, and hired equipment; depreciation, taxes, insurance, salaries, and service department or indirect expense are allocated quarterly to each cost center and represent the complete cost of operation for the period.

Mr. Davison also discussed his company's system of determining labor costs and their distribution, which has been used for the last three years. Automatic machine filing time cards are used, which are notched to indicate job classifications. When all classifications have been indicated by notching the cards, they are "needle-sorted" by jobs; and an adding machine tape is prepared for each group such as dredging, towing, hoisting, etc., and balanced with the total shown on gross payroll on a payroll machine summary accumulated when the checks were

Owen Ayres, Allis Chalmers Mfg. Co., Milwaukee, Wis.; and Frederick W. Ayres and Oscar H. Kittilstad, both of Eau Claire Sand and Gravel Co., Eau Claire, Wis.

Lyle J. Walker, Lyle J. Walker Sand and Gravel Co., New Hudson, Mich.; and Clarence Burr and Cornelius N. Ray, both of Ray Industries Inc., Oxford, Mich.

prepared. This labor distribution setup has been found to be very accurate. In addition, man-hours are accumulated along with labor dollars in the summary secured from the distribution.

In this type of operation, sand and gravel may be sold at various stages of handling, such as loaded in barges at the dredge, delivered in barges to various landings along the rivers, F.O.B. several different yards or hoists, or delivered in trucks to the job site, the speaker said. It is thus important and necessary to know the unit costs of each of these operations if the firm is expected to bid competitively for the requirements of contractors or dealers, and many unusual situations develop where the unit costs are extremely important.

In concluding, Mr. Halter made a sincere appeal to the accounting men of the industry, calling for their cooperation in continuing the Association policy of exchanging ideas and discussing methods in accounting, costs, and related statistics at future meetings.

Employee Stock Plan R. K. Humphries discussed *Employee Stock Purchase Plan of Pacific Coast Aggregates, Inc.*, which was inaugurated effective March 1, 1953. After ten months operation of the plan, some 160 employees collectively own over $32,000 worth of stock, he reported.

The stock is purchased through small payroll deductions and is obtained as cheaply as it can be purchased in round lots of 100 shares. As employees cancel out of the plan and liquidate their holdings, the company buys them back with the current money in the plan at the market price net.

According to the speaker such a stock plan offers many advantages, and he urged producers to consider it carefully. The plan tends to make employees feel that they are working for themselves as well as for the boss. It helps to make them cost-minded and sales-minded. It gives management additional pairs of eyes, looking for means of improving the operation. Furthermore, employees who are financially interested in the welfare of the company tend to be more stable, and employee turnover tends to be reduced. Also, stock purchase plans encourage employees to save money, and employees who accumulate savings are more stable members of the community.

Technical and Operating Developments

The operating session featured a wide range of timely subjects, including retention of fines in sand, the production of fines in sand by crushing and grinding, removal of deleterious particles by heavy media separation, and the use of belt conveyors. Judging from the subject matter, quality of the papers, the use of color slide illustrations, and the discussion which followed, the session was highly successful.

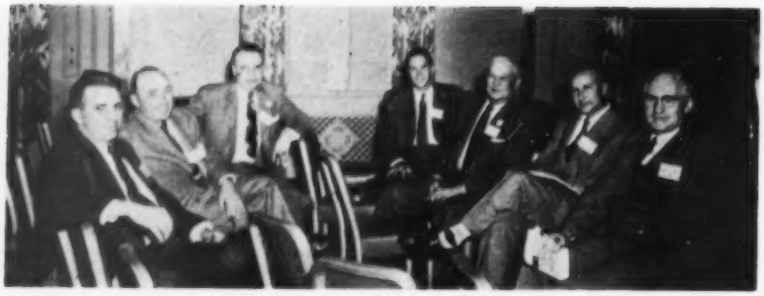
Retention of Fines Two papers were presented on this subject —one by M. C. Evans (Becker County Sand and Gravel Co., Cheraw, S. C.) featuring the use of cone (centrifugal) classifiers and the other by Robert H. Klossner, (Witte Gravel Co., Kinder, La.), featuring the use of bowl classifiers.

Mr. Evans reported that four of his company's five plants in the Carolinas had a problem of retaining fines (minus 50-mesh plus 200-mesh) in washed sand, primarily because of the relatively large amount of clay present in the deposits. Experiments were carried on at different plants with different types of sand classifiers such as sand screws, sand drags, and sand settling tanks, and difficulty in saving the fines was encountered because of the large volume of water that had to be added to the raw product in order to insure perfect cleaning. It was found that about 1,000 g.p.m. of water for each 100 t.p.h. was required in order to have the water, sand and clay mixture thinned down enough so that the clay and sand would separate.

According to Mr. Evans, the solution was found by using 25-in. dia. Whirlcone centrifugal classifiers; Mr. Evans reported that fourteen of them are now in service. All are of the same size so that repair parts stocked at one plant can be used at other plants.

In actual operation, the material flows from rotary screens and vibrators to 36-in. dia. by 25-ft. dewatering screw classifiers. Overflow water from the classifiers goes into a settling tank measuring 30 ft. long, 8 ft. wide, and 5 ft. deep. Three 4-in. slurry pumps mounted at the base of the tank draw off the fines, transferring them to the cones. The settling tanks have an overflow perimeter of 76 ft. so that the excess amount of waste water overflowing the top of the tank does not carry anything except clay fines to the waste area. More than 50 percent of the product going into the cones is minus 200-mesh whereas only 10 percent of the recovered fines is minus 200-mesh.

In order to regulate the amount of fines recovered by the cones, Mr. Evans said that the waste water discharge pipe can be raised or lowered



Operating Problems Committee of the N.S.G.A. include (left to right): L. P. Struble, Dravo Corp., Pittsburgh; J. L. Shiely Jr., J. L. Shiely Co., St. Paul, Minn.; E. K. Davison, J. K. Davison & Bro., Pittsburgh, Pa.; P. W. Gifford, Gifford-Hill & Co., Dallas, Tex.; Dudley E. Baker, Texas Construction Material Co., Houston, Tex.; Eric A. Goodman Jr., B. V. Hendrick Sand & Gravel Co., Lilesville, N.C.; and Ezra Knowlton, Utah Sand and Gravel Production Corp., Salt Lake City.

inside the cone. Lowering the pipe produces a coarser recovered product, and raising the pipe causes the opposite.

Mr. Evans reported that maintenance, repairs, and operating costs on the fine sand recovered from the cones totalled about 6c per ton; but this does not include depreciation on the pumps and cones. Maintenance costs have been reduced materially by using rubber lining and abrasive resistant nickel alloy castings.

Mr. Klossner discussed the retention of fines through mechanical settling devices (such as bowl-rake classifiers) and natural drainage. He stated that the bowl rake classifiers are the outgrowth of settling cones, which have been used since about 1900. He indicated that the use of bowl rake classifiers is becoming more popular in the sand and gravel industry; the units are made of steel or concrete with diameters and depth varying according to job specifications. Generally the discharge product from the classifier is passed through dewatering screws in order to remove excess water.

The speaker discussed several operations in which the bowl classifier plays an integral role. On one project a 20-ft. dia. unit was used, in which the volume of water above the sand bed was 357 cu. ft., depth of water at the perimeter was 9¼ in., and depth of water at the center was 20-in. (The depth of the sand bed at the perimeter was 11 ft.). Using a settling rate for 230-mesh sand of 0.580 ft./min. it was found that the 230-mesh particles would settle about 9½ in. at the edge, which was sufficient for the rakes to catch them and return them to the discharge mechanism.

The speaker said that after the unit was installed and in operation tests were run on it; the discharge from the unit was a product that was 95 percent minus 50-mesh, 45 percent minus 100 mesh, and 20 percent minus 200 mesh. The unit was discharging at a rate of from 20 to 25 t.p.h., and the discharge product contained about 27 percent moisture.

Mr. Klossner also reported that natural drainage is being used extensively for collecting fines throughout the country. At one plant all the wash water and sand in the plant is gathered up in a large tank, and the slurry is pumped to a storage area for draining. When the storage pile is built up, sand is removed and a uniform product is obtained if the full face of the storage pile is worked. At another plant it was found that the screw dewatering device was being fed so much water with the sand that it was throwing the fines out with the overflow water. To overcome this, the sand settling boxes were tapped where the fines were settling out, and this slurry of fine sand and water was fed into the railroad cars with the discharge from the screw; the surplus water was allowed to drain through the cracks in the railroad cars.

Production of Fines By Grinding Two papers covering the production of fines by grinding were given—one by Robert S. Barneyback (Henry J. Kaiser Co., Oakland, Calif.) on the use of rod mills and the other by C. A. Williamson (Perkins Gravel Co., Sacramento, Calif.), on the use of ball mills.

Mr. Barneyback presented details of operating performance of three rod mills used by his company at the Radum plant in Pleasanton, Calif.

Rod mill No. 1, an 8- by 12-ft. two-trunnion type, end discharge unit, driven by a 350-hp. motor, was installed in 1947 and was operated wet. The end product was classified by a bowl and rake classifier. Production to January 1, 1954 has amounted to 950,000 tons, or an average production rate of 50 t.p.h. During that period, the average consumption of rods was 1.04 lb. per ton of finished sand, and the average consumption of liners and lifters was 0.1 lb. per ton. The rod charge was 38.5 tons, using 3-in. rods. The side liners and lifters were made of rolled steel and the end liners of manganese steel; side liners were switched frequently to balance wear.

The average moisture of feed was 3 percent, the approximate amount of added water to the mill was 60 g.p.m., and the approximate amount of added water in chutes and classifiers was 600 g.p.m.

Approximate operating costs without depreciation (present day costs), were as follows:

Operating labor	$0.05 per ton
Repair labor	0.03
Rods, liners & repair parts	0.14
Power & lubricants	0.08
Total per ton	$0.30

The following is the sieve analysis of the feed and the finished product (in terms of percent passing):

Sieve Size	Feed	Finished Prod.
½-in.	100	100
⅜-in.	99	100
3 mesh	81	100
4 mesh	38	100
8 mesh	8	91
16 mesh	2	60
30 mesh		34
50 mesh		18
100 mesh		8
200 mesh		4
270 mesh (wash)		3

Rod mill No. 2, a 5½- by 12-ft. center peripheral discharge unit, driven by a 150-hp. motor, was installed in 1948; it was also operated wet. The finished product was returned to the main plant for processing with natural sand. Production to January 1, 1954 has totaled approximately 550,000 tons. The unit was fed at about 38 t.p.h. The rod, liner and lifter consumption was same as the No. 1 mill; however, the rod charge was 22 to 23 tons.

Rod mill No. 3, the same size as No. 1, was installed in 1951. It was operated dry until July 1, 1952, and then converted to a wet operation on January 1, 1953 and continued throughout the year as such, producing about 175,000 tons. The operation is parallel in all respects to that shown for Mill No. 1, except that a 60-in. screw classifier is used to classify and dewater the product from the mill. Production to July 1, 1952 (1 year) was 125,000 tons, with an average production rate dry of 32 to 35 t.p.h. During this period, average consumption of rods (3-in.) was 0.98 lb. per ton finished sand.

The rod charge was 40 tons. Moisture in the feed was 2 percent to 5 percent and moisture in the finished product was 1 percent to 3 percent.

The approximate cost to operate Rod Mill No. 3 without depreciation was as follows:

Operating labor	$0.10 per ton
Repair labor	0.03
Rods, liners & repair parts	0.06
Power & lubric'ts	0.12
Total per ton	$0.31

Mr. Barneyback reported that the end product particles of the rod mill are somewhat more angular than natural sand particles of the area, but that the contrast apparently does not affect the end use in concrete. However, he said that some contractors prefer the rod mill product, others do not.

Mr. Williamson reported that the ball mill is very well suited for the production of sand fines, and at a reasonable cost. His plant uses a Marcy "75" grate-type discharge ball mill, with the original shiplap liners still in use; the mill, driven by a 120 hp. motor, is charged with ¾-in. by ⅜-in. crushed rock at the rate of 10 t.p.h. The rock is very hard, dense, and quartzitic, having a specific gravity of 2.77.

According to Mr. Williamson the cost of operation totals 30 cents per ton of feed; this includes 3 cents for liner wear (based on a wear rate of 0.17 lb. of liner per ton of feed), 9 cents for ball wear (based on a wear rate of 1½ lb. of balls (centrifugally cast steel type), 15 cents for electrical power, and 3 cents for lubrication and maintenance. The mill is expected to produce 150,000 tons before the liners and grates are replaced. He added that this cost does not cover reclaiming the product of the mill and getting it into the finished sand. The speaker pointed out that since the rock handled is very tough and the finished product is high quality (50 percent passing 50 mesh), the relatively high operating cost is justifiable.

In actual operation, the mill is gravity fed. Originally a spiral scoop feeder was used, but it was discarded since it was subject to a lot of wear. Furthermore it was not needed, since the ball load was reduced so that water and feed material did not back out of the trunnion.

The mill operates at 18½ r.p.m., which is 65 percent of the critical speed. Higher speeds are more efficient for fine grinding and increased capacity, but produce more slimes which are a total loss in the production of sand. Slower speed on the other hand cuts down liner and ball wear and induces cataracting in the mill. Higher speeds induce centrifuging, which causes the balls to strike past the toe of the load; this obviously causes undue liner wear and cuts down crushing action. But too slow a speed makes the balls slide on the liners causing undue wear and promoting the grinding of slimes.

Crushing creates less friction than grinding. Thus a large diameter mill is more efficient for fine sand production because the balls fall a greater distance when cataracting. Also, larger balls hit harder and do more crushing. The Perkins plant uses 4½ in. balls, and a small ball load (6 tons) which cuts down grinding.

The speaker stated that fines tend to cling to the balls and are ground to slimes unless enough water is circulated to carry them out of the mill. A mixture at the discharge end of not more than 25 percent solids is recommended. This is one of the most important factors to minimize sliming, he said.

If a grate-type mill is used, grate openings of ⅜ in. or larger are recommended; this gives enough open area to allow fines and worn balls to pass out of the mill promptly. This is desirable since small-sized balls not only do not crush, but they fill voids that should be filled with pulp.

Heavy-Media Separation The first of two papers on H.M.S. was given by L. P. Struble, vice-president, Dravo Corp., Pittsburgh, on the subject *Removal of Deleterious Particles from Sand and Gravel.* This talk was a follow-up to one given at last year's N.S.G.A. convention, in which Mr. Struble discussed for the first time the details of the pioneering use of heavy-media separation on one of the Keystone Gravel Division's river barges.

The speaker reported that since he made his first report, nothing startling in the way of new ideas has developed nor have any serious new problems been found. However, early in 1953 the firm replaced the cone-type magnetic separator with belt type separators which have performed remarkably well.

He stated that the plant was operated 1,500 hours between January 1 and October 30, 1953, and average production was 104 tons per hour; the peak load was probably around 150 t.p.h. During this time 128,000 lb. of media was added to the system; this represented a loss of .82 lb. of media per ton of gravel produced. Although no additional tests on the effect of this plant on the gravel have been run, he said that the machinery has proven to be very dependable.

He reported that operating costs, exclusive of depreciation, amounted to 12 cents per ton of gravel produced. A major item of maintenance cost is attributable to screens which have cost over 4 cents per ton, but the firm expects to reduce this item to 2 cents per ton. It is necessary to operate with 3/16-in. by No. 10 wire cloth on the bottom deck, and the media wears this relatively light screen very fast. He indicated that the firm is experimenting with different screens, but to date the answer to the problem has not been found.

In discussing costs, he pointed out that although the 12 cents cost is sizable, this figure does not tell the whole story. Thus there are advantages inherent in the operation which are not accounted for in the cost figure. For example, when objectionable materials are encountered in a deposit, the dredge need not move to a new location, since the H.M.S. plant can handle the objectionable materials. Thus operating time is not lost, and savings result. In the speaker's opinion, these savings offset the 12 cents figure enough to make the operation profitable.

The second paper, *Considerations In Applying Heavy-Media Separation To Beneficiation of Aggregates,* was given by R. W. Hernlund, Western Machinery Company, San Francisco, Calif. At the outset, Mr. Hernlund said that heavy media is used to remove deleterious materials from gravels. He defined deleterious materials as those minerals and rocks which cause aggregates to be unacceptable, and which can be separated from the sound constituents of the aggregates by respective differences in specific gravities.

The speaker then went on to describe four gravel producing companies in the U. S. and Canada which have successfully used H.M.S. These included a Royal Canadian Air Force installation in Manitoba, the Dravo Corporation plant referred to in Mr. Struble's talk, the Owatonna Aggregates Corporation plant in Owatonna, Minn., and a new installation in Michigan. (The first three plants have been described in PIT AND QUARRY. See Vol. 42, No. 6 December, 1949, p. 60; Vol. 45 No. 10 April 1953, pp. 76-80; and Vol. 46 No. 4 October, 1953, pp. 87-91.)

According to the speaker, two definite factors were developed in the

(Continued on page 106)

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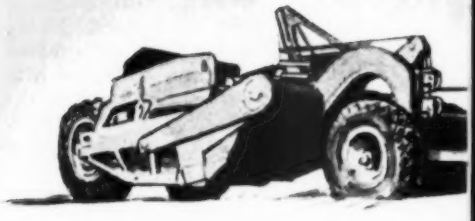

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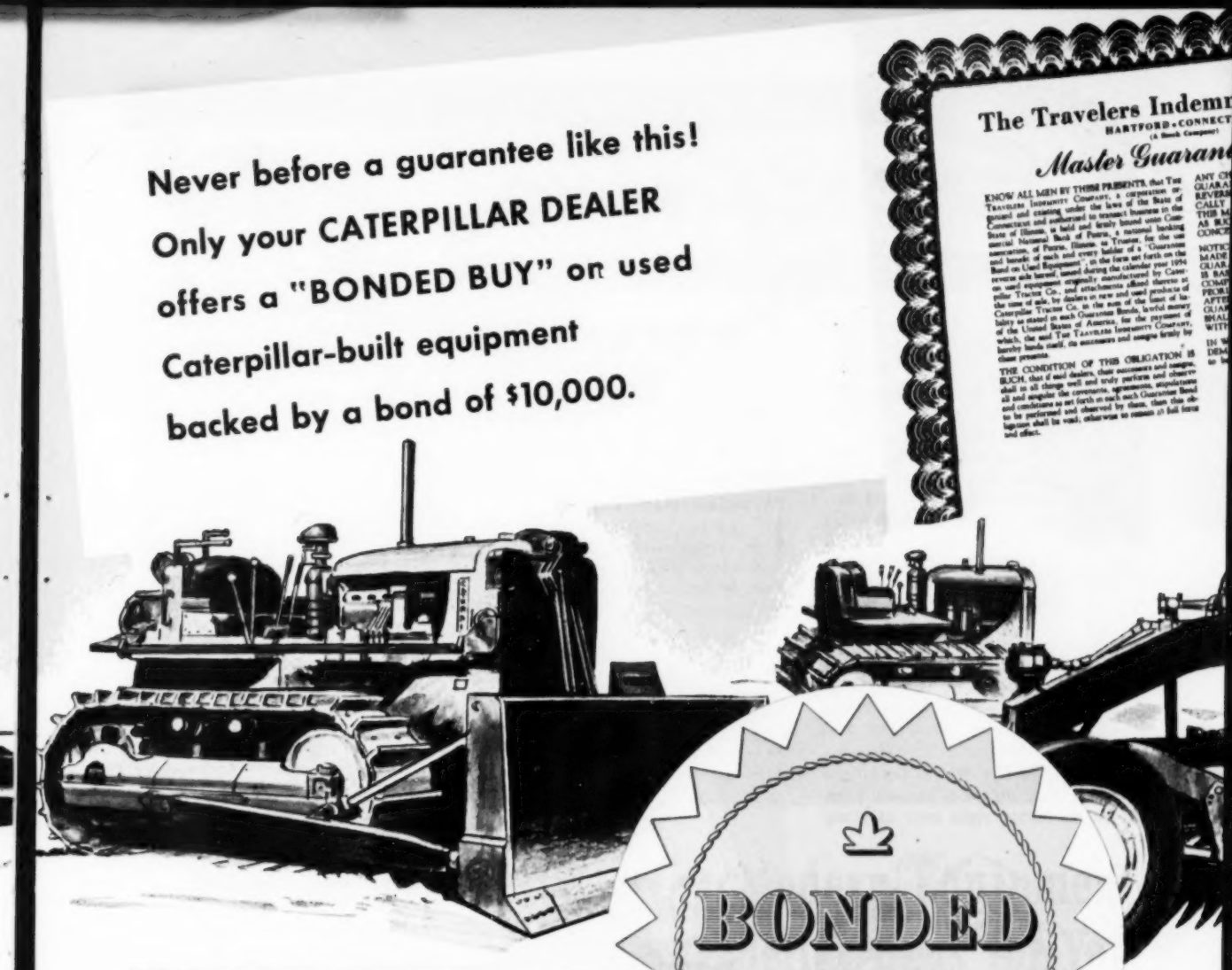

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Your Caterpillar Dealer offers you three clear-cut classes of used equipment. He backs each one in writing. You buy with confidence, sure that the equipment is honestly described. See him for the best used values on the market:

(1) **"BONDED BUY."** Only the best in used Caterpillar-built equipment. Each "BONDED BUY" machine is backed by a Dealer's Guarantee Bond equal to the purchase price of the machine up to a maximum of $10,000. This provides a guarantee for thirty days against unsatisfactory performance due to defective parts. If a part should prove defective within the guarantee period under the normal conditions of your job and with proper maintenance, your dealer will put your machine back into operating condition *with no charge to you for parts and labor* up to the amount of the bond. The Dealer's Guarantee Bond is backed by The Travelers Indemnity Company. Your Caterpillar Dealer gives you this protection with your purchase of a "BONDED BUY" machine. Look for the "BONDED BUY" symbol —it's your assurance of the best in used equipment.

(2) **"CERTIFIED BUY."** Next best buy in used equipment: "Certified Buy" covers machines of any make in good condition. Your performance guarantee is in writing backed by your Caterpillar Dealer.

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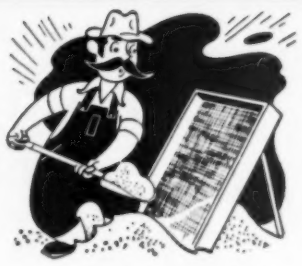
Screenings



by William M. Avery

A FELLOW in Washington, D. C., says he has developed a sucessful method for converting the government's $1,176,000,000 wheat surplus into wall board for building houses, furniture, and airplanes. Details of the process haven't been announced, but we understand that in the first stage of production the wheat is puffed up in approximately the same way that puffed wheat breakfast cereal is made. The material is then compressed and fused into planks, one bushel of wheat producing a sheet measuring 4 by 12 ft. by 1 in. thick. It is said to have excellent insulating and acoustical properties.

Far be it from us to try to impede the march of progress, but we want to go on record right now as being

unalterably opposed to such nonsense. In the first place a lot of people, including us, are allergic to wheat. We're also sufficiently allergic to the notion of having to mow grass *around* our domicile, without deliberately incurring the additional chore of having to clip a similar growth from the roof and exterior walls after every spring rain. Then there's always the possibility that the kids might take a liking to puffed wheat the instant they realized that they weren't supposed to eat it, a development which would not only raise hell with maintenance and upkeep, but one which would touch off heaven knows *what* claims and counter claims by rival manufacturers concerning the vitamin-, calory-, butterfat- and chlorophyll-content of their various products.

Physician, Heal Thyself

IN case the connection between the shy young woman and the concrete block (that's the thing with the *straight* lines, Junior!) in the accompanying photograph may elude

our readers, we'd like to explain. According to the release that was attached to the picture, she's explaining that just one tablespoonful of a certain admixture per bag of cement effected a substantial improvement in the texture, color, and general eye appeal of the block.

So far as we can judge, there's nothing wrong with her texture and color, but we're hanged if we don't think she might try, say *half* a spoonful now and then for that old eye appeal.

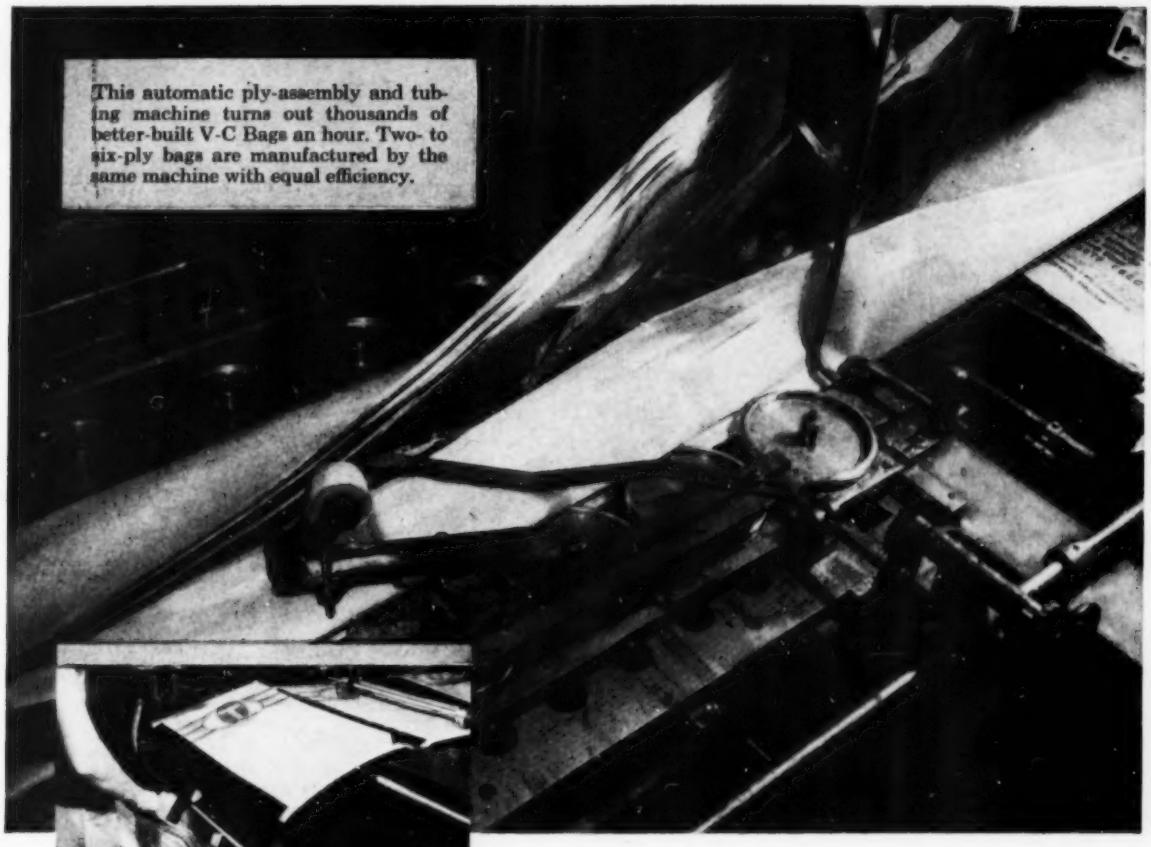
A UNITED States district court in Denver has turned over to the food and drug administration 30 sand-filled cotton bags the labels of which promised that health benefits could be obtained from the enclosed minerals. The court ruled that the bags had been misbranded. That may very well be, but we can't find a whale of a lot of difference between attributing therapeutic properties to sand and claiming structural properties for breakfast cereal (see left column).

Fact is, we think the claim for sand rests on firmer ground, especially when you stop to consider that spinach (a relatively tasteless leaf which is so damned healthful that almost nobody can enjoy it), owes a great part of its reputation to the sand it contains. Wouldn't surprise us a bit to learn that the reason the spinach trust has never tried very hard to get the sand out of its product is because they discovered a long time ago that the sand provided most of the nourishment and all the flavor.

Maybe Somebody's Lion

LOST, STRAYED or stolen: the smaller of two stone lions which have for years guarded the entrance of a boathouse at Sandusky, Ohio. Police are reported to lean toward the theft theory because wheel marks

at the scene indicated the use of a mechanized hoisting device. This seems a tenable premise except that we find it hard to believe that anybody would covet a 900-pound stone lion badly enough to go to all that trouble. Guess there's just no accounting for tastes.



This automatic ply-assembly and tubing machine turns out thousands of better-built V-C Bags an hour. Two- to six-ply bags are manufactured by the same machine with equal efficiency.

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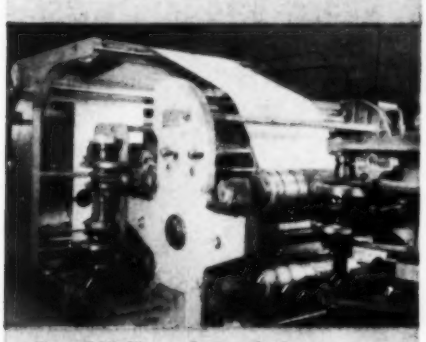

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N.S.G.A. Convention

(From page 101)

decision to install H.M.S. facilities at these four operations. The first relates to the economic advantages of using heavy media for removal of unsound materials from poor gravel. In at least three of the four operations, the gravels are being treated by heavy media at costs low enough to retain a favorable competitive situation. Treatment of local deposits can, in some cases, prove more profitable than obtaining aggregates located some distance away. In addition successful heavy-media treatment of poor deposits is an excellent low cost method for extending the life of that particular deposit. Extension of such reserves is becoming a quite important factor in a number of producing districts, especially those located near our greater centers of population. Another factor relating to economics concerns contractual requirements for furnishing specification aggregates. Time is usually of the essence in these instances. A considerable scurrying around is the prominent activity on such contracts after much time and many thousands of dollars have been spent in preparation to pour concrete—only to find that the aggregate has been rejected. Heavy media can be one quick answer to solving such problems, should the rejected aggregate be amenable to treatment by the process.

The second basic factor relates directly to aggregate specifications. Practice demonstrates that heavy media can be a very useful tool for separating an aggregate into relatively small portions of light weight material and relatively large fractions of heavier material. In these instances, the rejection of the lighter fraction definitely resulted in an aggregate of improved characteristics. Thus by taking advantage of the differences in specific gravities of the rock constitutents that make up an aggregate, the specifications of that aggregate can be accurately controlled.

Aggregate specifications can be discussed briefly from another point of view, he went on, namely that the lightweight fraction generally contains numerous soft particles like shale which are physically unsound. Similarly the lightweight fraction generally contains opaline rocks which although being physically sound, are still deleterious because of alkaline reactivity in concrete.

Mr. Hernlund concluded by discussing the nature and value of investigating potentialities of H.M.S. by heavy liquid and heavy-media laboratory testing. He pointed out that considerable preliminary information on economics and specifications can be evaluated as a result of fairly simple test programs.

In an actual testing program, the gravel sample is tested using a series of heavy liquids (made by mixing acetylene tetrabromide with varying amounts of carbon tetrachloride) in order to determine the optimum specific gravity of the heavy fluid needed to remove the deleterious particles. This procedure determines the amenability of aggregate to treatment by H.M.S.

In some cases it is advisable to verify heavy-liquid test data with more elaborate testing by actual use of heavy-media materials.

Belt Conveyors The operating session was concluded with a paper on *Economical Factors in Belt Conveying* by R. U. Jackson (Hewitt-Robins Inc.). Mr. Jackson maintained that maximum service and economy in belt conveyor operation can be obtained if the operator is willing to discuss his overall problem with the supplier so that the proper design and proper specifications can be prepared as related to the operator's particular project.

He outlined a check list of nine economy factors in belt conveying, including the following:

1. Select equipment suited to your needs. A sand or gravel pit with an estimated life of 10 years should not be equipped with machinery designed for a potential life of 20 years, or vice versa.

2. Make someone specifically responsible for "good housekeeping." Proper maintenance prevents costly trouble.

3. Keep complete records on belts and equipment and their specifications.

4. In line with safety, have a pull-cord connected with control switches running the entire length of the conveyor so that an emergency stop can be made from any point.

5. Prevent drive slippage with inexpensive centrifugal switches, operating from either the belt itself, a return idler, or a bend pulley, interlocked with the conveyor control. When slippage starts the belt speed is reduced and the switch opens the circuit, thus stopping the motor.

6. To protect against side travel at both the head and tail terminals, install limit switches or mercoid paddle switches.

7. Where an expensive belt may be damaged at a transfer point, consider use of a transition belt, or speed-up belt, 10 or 15 ft. long to absorb the impact and wear of the transfer.

8. Have the return belt of a conveyor located below the supporting conveyor stringers, making the belt easily inspected.

9. To determine a lubrication schedule, pull an idler out of line at random and examine bearings and seals. Don't rely on an arbitrary rule such as hours of operation.

Of all the factors listed, Mr. Jackson stressed that good housekeeping is the most important factor in achieving low cost per ton.

Reports of State Associations

An informative panel discussion covering *Representation of the Industry at State Capitals* was held, in which state association directors from Ohio, California, Pennsylvania, and New York took part.

Ohio Representing Ohio was Claude L. Clark, executive secretary of the Ohio Sand & Gravel Association and the Ohio Ready Mixed Concrete Association, Columbus.

In discussing Ohio legislation of interest to the sand and gravel industry, Mr. Clark first considered the enactment of legislation in 1953 for increasing Ohio's revenue for roads, including the highly controversial axle-mile tax, the 1 cent increase in gasoline tax, the re-enactment of increased fees on commercial vehicles, and a $500,000,000 bond issue amendment.

He said that the Ohio association takes an active interest in highway and street legislation—especially as to revenue therefor, and how the money is distributed among the various political subdivisions. He especially indicated that the expenditure of the money issued under the new bond amendment bears watching, since abuse in the expenditure of the bond money could do more harm to Ohio's road and street program than any benefit from an accelerated program.

Next the speaker discussed a law permitting private insurance companies to invade the industrial insurance field in Ohio, which was introduced last year and defeated. It is expected to be introduced again next year. The state association is against this bill because it would probably result in higher insurance rates for the industry.

Another bill introduced in 1953 woud have permitted local political sub-divisions to produce and then sell to other political subdivisions road materials such as sand and gravel, crushed stone, bituminous mixed materials, etc. In other words, this bill would have permitted local subdivisions to become competitors in road materials. Fortunately he said the bill didn't get beyond the House Rules Committee.

In closing Mr. Clark stated that legislative work is not just a job for the association executive. It is a job for every industry member. The industry member owes it to his company and to the industry in which he is engaged to cooperate in legislative problems.

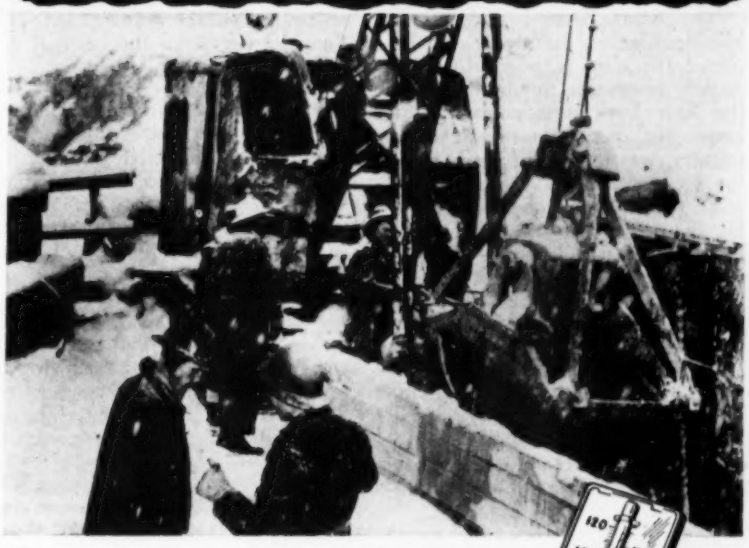
California A report on California's legislative activities for 1954 was presented by H. G. Feraud, executive-secretary, Southern California Rock Products Association and Southern California Ready Mixed Concrete Association. He stated that his activities during 1954 in connection with legislation will consist of appearances before the Legislature Interim Committees which are considering subjects of interest to our industries. The association has already appeared before the Interim Committee on Motor Vehicle Registration and Weight Fees and has submitted evidence and briefs in support of the industry's position that there should be no changes made in the present revenue acts pertaining to this subject. At present the weight of the mixing equipment on a ready-mixed concrete truck is exempted in computing the unladen weight of the vehicle upon which the tax is assessed.

Appearances will be made before the Interim Committees or Unemployment Insurance and upon Workmens' Compensation. He said that changes in the present laws covering both of these subjects are imperative if the true intent of the original legislation is to be carried out. Flagrant abuses are common at present due to the lack of the necessary provisions in the existing laws to prevent them.

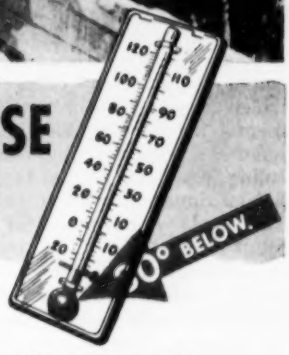
Coming up for consideration before the Interim Committee on Highways will be the ton-mile tax, which is being strongly pressed by certain departments of the State and by transportation interests opposed to truck transportation. A vigorous opposition to this measure will be presented by both for-hire truck interests and the operators of proprietary trucks, who claim that this taxation is expensively operated and unjust.

Mr. Feraud reported that major strides in legislation were made in

Frosty OWEN



at HUNGRY HORSE DAM



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1953, due largely to the various industries of the state for the first time in ten years presenting a unified front at the 1953 Legislature.

New York Paul R. Smith, executive secretary, Empire State Sand, Gravel and Ready Mix Association, Buffalo, N. Y., discussed the ways in which his association represents the industries at the New York state capitol. This association, one of the newest in the country, was formed in June, 1951; the membership includes 98 active and 39 associate members, representing 90 percent of the firms of the state, exclusive of New York City.

Mr. Smith stated that his association attempts to establish and maintain an understanding working relationship with both state legislative and executive branches (particularly the Dept. of Public Works and the Motor Vehicle Bureau). The association, in particular, has both a sand and gravel and a ready mix concrete committee working closely with Public Works.

The speaker mentioned one recent ruling of the Motor Vehicle Bureau, which the association was instrumental in changing for the betterment of the ready mix industry. The ruling required trucks to be licensed for maximum carrying capacity; 3-axle trucks were licensed for a minimum of 44,000 lb. The association first secured exception for ready mix trucks, having them licensed for gross weight actually carried. Later the ruling was changed completely so that all trucks would be registered for declared gross load.

According to Mr. Smith, the two main functions of the association regarding legislative activities are (1) to supply legislators and officials with proven facts gathered from experience in the business and (2) to maintain favorable public relations at all levels—state, county, and town.

The speaker concluded with several accomplishments of the association concerning legislation. First the association was instrumental in having legislation changed which would have required ready mix trucks to be equipped with hose carrying gas fumes away from the working area of employees; the rule was amended so that now the contractor on the job is responsible for having sufficient hose to vent off exhaust fumes.

Another bill proposed that all open wells, cesspools, cisterns, and sand and gravel pits be covered with suitable protective construction or surrounded with protective fencing (in order to prevent recurrence of drowning accidents). The bill was thus a blanket indictment against all state sand and gravel pits, regardless of size, location, or method of operation. Fortunately the reference to sand and gravel pits was deleted in the bill which finally passed. The association again indicated to sponsors of the bill the impracticality and financial hardships the original bill would have had on producers.

Pennsylvania In his talk H. Hershey Miller, executive-secretary, Pennsylvania Sand and Gravel Producers' Association, Harrisburg, discussed the role of his association in the fields of engineering, specifications, and research problems. First Mr. Miller outlined the numerous items offered by the association to its members.

Mr. Miller stated that the Pennsylvania Association has been instrumental in the rapid development of the sand and gravel industry in the state. When the organization was first formed, gravel was only permitted to a limited extent in concrete and was not permitted in bituminous concrete or for surface treatment chips; now sand and gravel is accepted in all types of construction on an equal basis with other aggregates.

The speaker also discussed the role the association plays in state specifications. He said that it is the practice of the State Highway Department to revise its specifications at intervals of two or three years. Usually the work on the new specifications is started about one year before they are released. During this period of preparation, conferences are arranged between contractors, producers and the Department to discuss suggested changes and proposed revisions which might be desirable. These are frank discussions designed to give and receive information, why changes might be desirable or why such change might not be practicable. The Department learns some of the problems of production and the limitations this places on producing certain sizes economically.

After conferences have been held with the organizations representing the various aggregate interests, the Department calls a joint conference of the Associations representing the producers of stone, slag, and gravel to iron out any differences and to make final adjustments.

In closing, Mr. Miller said that this exchange of ideas and close association with the Highway Department, various Federal Agencies and Local Sub-Divisions of Governments, has resulted in better understanding of our problems and more friendly relations.

The association has stressed the importance of having personnel at each plant qualified to interpret specification requirements and conduct tests on materials. By testing materials prior to shipping, costly rejections, after material arrives on the work, are avoided.

Highway Problems

Los Angeles Freeway The first of two papers on highway problems was presented by Harrison R. Baker, recently retired vice-chairman, California Highway Commission, Pasadena. In his talk, Mr. Baker described the Los Angeles Freeway program, one of the nation's outstanding urban highway projects, which was designed to relieve the critical traffic problem in the Los Angeles area. He discussed the progress of the program to date, the plans for future construction, and the basic financing methods and economic aspects involved.

According to the speaker the freeway system is being built as a part of the California state highway system and is being financed and constructed almost entirely by the California Highway Commission and Division of Highways. The entire program encompasses nine separate freeways and some 220 miles of state highways; the first section (Arroyo Seco) was completed in 1941, but it was not until after World War II that the major construction got under way. The speaker reported that at the present time, 57 miles of the integrated system has been completed, 28 miles are under construction, and construction is budgeted in the ensuing year for 12 additional miles. To date $300,000,000 has been invested in the freeway program. Mr. Baker added that right-of-way acquisition is proceeding on some 40 additional freeway mileage, and about 83 miles of additional freeway routes have been adopted by the commission for protective advance right-of-way acquisition and future construction.

Mr. Baker next discussed the economic value resulting from freeway usage, citing the recently-completed 10 mile long Hollywood Freeway as an example. He stated that currently this freeway, which cost $55,000,000, handles about 125,000 cars daily. One apparent advantage of the freeway lies in relieving parallel streets of of much traffic (49 per-cent in the case of one street), thereby improving them for normal business and shopping purposes. The major advantage, however, he stated, lies in pro-

viding a direct saving to the motorist using the freeway rather than a paralleling crowded street. The saving is estimated conservatively at 1 cent per mile but may be as high as 2 cents. Using the 1 cent figure, the speaker stated that these "dividends" would return the total cost of the freeway in 12½ years. To this advantage must be added the obvious time saving and convenience features.

In concluding, Mr. Baker emphasized that an adequate highway system throughout the U.S., and particularly of urban freeway systems, is one of the pressing economic problems immediately facing us. He urged that the problem be approached in the same manner that corporations handle their expansion problems, that is, consider the potential investment of highways in terms of returning increased dividends.

Federal Aid For Highways In his talk entitled *The Importance of Federal Participation in Road Building*, G. Donald Kennedy, executive vice-president, Portland Cement Association, Chicago, called for an expanded program of federal aid for highways, pointing out that it is of fundamental importance to our economy and national defense. He stated that the federal aid program, which has been in existence over 40 years, has helped provide the nation with soundly planned and built public roads. The program is indispensable for the orderly growth of our national highway system.

Mr. Kennedy cited the outstanding Los Angeles Freeway program as a classic example of the benefits of federal-state-urban cooperation in the financing and building of adequate roads. He also discussed California's entire highway system, stressing the important role of federal aid in the building of the highly productive portion of the system. From this discussion, he stated a major finding, namely, that federal-aid highways, while representing a relatively small percentage of public roads over the nation, are the heavily traveled, highly important roads of the country. They are the necessary roads, built where traffic surveys and engineering data show they should be built, to be of the greatest service and practicality.

The speaker also discussed the 1944 Act which established the National System of Interstate Highways. This system encompasses one percent of the nation's rural highways, and carries 20 percent of the traffic; it joins 42 state capitols, connects 95 percent of the cities over 50,000 population, and serves 65 percent of the urban population and 45 percent of the rural population. The main advantage of the 1944 act, he pointed out, lies in providing a central influence for the integration of the various state systems into an orderly whole and to prevent a purely closed viewpoint among states which vary in character and population.

In calling for support of the federal aid program, Mr. Kennedy indicated that there are major forces at work trying to undermine the program by having the federal gas tax repealed and returning to the states that privilege. There is also considerable opposition to federal aid money being spent on high-cost urban highways. Concerning the latter, the speaker felt that because of the seriousness of our nation's urban traffic problems, the federal aid program should definitely be used for this purpose—and even expanded.

Mr. Kennedy also considered the proposed 1954 Federal Aid Highway Act, which provides for $600,000,000 for the fiscal year ending June 30, 1956, and a like sum for the next year. Of that amount, $270,000,000 is to be used on the primary system, and $180,000,000 on the secondary.

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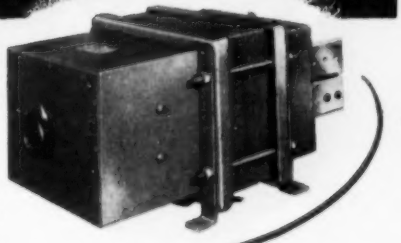

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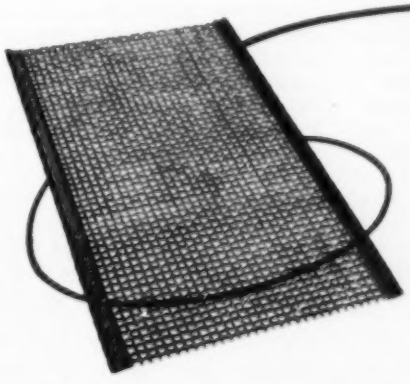

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weather ON THE SPOT report

THE 37th annual convention of the National Crushed Stone Association, which was held at the Conrad Hilton Hotel, Chicago, on February 22, 23, and 24, 1954, was notable for several reasons but chiefly because of the spirit of optimism and confidence in the future which was evident among producers and machinery manufacturers. This spirit was reflected in the attendance, which totalled 1,522, a new record even for an exhibit year. It was evident in the machinery exhibition which set a new record in the number of exhibitors and in the attractiveness and completeness of the individual exhibits. The various speakers also reflected this spirit in different degrees, making it evident that the only thing that can stop the growth of our economy is lack of confidence.

The program at this convention was, as usual, filled with important papers and discussions covering a wide range of subjects important to the industry. Included were such subjects as: a report of business conditions and prospects for 1954, new developments in quarry drilling, warehousing and inventory problems, screening to specifications, chute design, accident prevention, percentage depletion, safety awards, legislative developments, public relations, road construction, association reports, etc. Time was allotted for discussion of each subject or paper and several sessions were followed by question and answer periods.

Operating problems were as usual given due prominence and the machinery exhibition was an outstanding feature. Two full mornings were set aside for inspection of these exhibits, which were also open later.

Officers and Directors The new president of the National Crushed Stone Association is Ted C. Cooke (Lynn Sand & Stone Co., Swampscott, Mass.), succeeding Horace C. Krause (Columbia Quarry Co., St. Louis, Mo.). James Savage was re-elected treasurer. Also re-elected were J. R. Boyd, secretary and administrative director; A. T. Goldbeck, engineering director; and J. E. Gray, field engineer.

New members of the executive committee are: Harry A. Clark (Consumers Co., Chicago, Ill.); George D. Lott Jr. (Palmetto Quarries Co., Columbia, S. C.); and A. W. McThenia (Acme Limestone Co., Fort Spring, W. Va.). Mr. Krause, of course, remains as a member of the committee and Mr. Cooke is the new chairman. The other members are: J. Reid Callanan (Callanan Road Improvement Co., South Bethlehem, N. Y.); Wilson P. Foss III (New York Trap Rock Corp., New York, N. Y.); Russell Rarey (Marble Cliff Quarries Co., Columbus, O.). Otho M. Graves (General Crushed Stone Co., Easton, Pa.), was re-elected an honorary member of the executive committee.

No changes were made in the Board of Directors of which Mr. Cooke, of course, is now chairman.

Russell Rarey (Marble Cliff Quarries Co., Columbus, O.), as chairman of the Percentage Depletion Committee had a report prepared which was made obsolete by the recent action of the House Ways and Means Committee. This action he

Scene of the N.C.S.A. annual banquet held on February 24 at the Conrad Hilton Hotel, Chicago.

regards as a very constructive one which removes much of the ambiguity now present. He emphasized that these changes are not yet law—the committee will send its report to the House and after it leaves the House there will be hearings. There is, he said, still a great need for a definition of chemical and metallurgical stone. Mr. Rarey in closing said that the increased amount of percentage depletion now allowed makes the entire philosophy more of a target for attack and, although it now seems to be safe, he warned against complacency.

Right: T. C. Cooke, Lyne Sand & Stone Co., Swampscott, Mass., new N.C.S.A. president, and Horace C. Krause, Columbia Quarry Co., St. Louis, Mo., retiring president.

Below: Irwin F. Deister, Deister Machine Co., Fort Wayne, Ind., retiring chairman N.C.S.A. Manufacturers Division, and B. R. Maloney, E. I. du Pont de Nemours & Co., New York, N.Y., new chairman.

Coming Conventions It was announced at this meeting that the 1955 annual convention of N.C.S.A. will be held at the Netherland Plaza Hotel, Cincinnati, O., on February 7, 8 and 9. No definite date has yet been set for the 1956 convention and machinery exhibition which will be held at the Conrad Hilton Hotel, Chicago, but it will be held the week following the convention and exhibition of the National Sand and Gravel Assn.

The 1954 midsummer board meeting will be held at the Homestead, Hot Springs, Va., July 22 and 23. A decision will be made there as to the location and date of the 1957 annual convention. No decision was made regarding the 1958 annual convention except that it will definitely be an inside show.

Manufacturers' Division At the luncheon meeting of the Manufacturers' Division of N.C.S.A. on Tuesday, February 23, B. R. Maloney (E. I. duPont de Nemours & Co.) was elected chairman, succeeding Irwin F. Deister (Deister Machine Co.). R. D. Ketner (General Electric Co.) was elected a vice-chairman, joining in that capacity L. A. Eiben (Northern Blower Co.) and Wayne W. King (W. S. Tyler Co.). Mr. Maloney, of course, is now chairman of the executive committee of which the other members are Messrs. Deister, Eiben, Ketner, and King. President T. C. Cooke of N.C.S.A. represents that group on the committee. Messrs. Maloney, Deister, and Eiben represent the Manufacturers' Division on the N.C.S.A. board of directors.

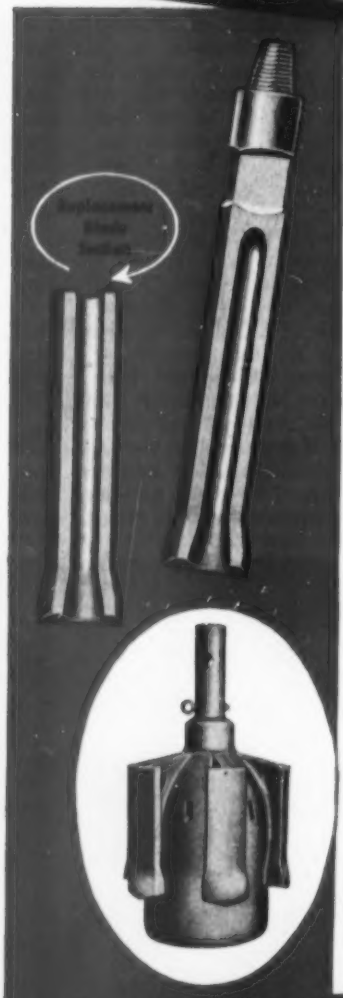
Four new members were elected to the division board of directors. They are: E. T. Eggers (American Steel & Wire Division); E. S. Gill (Gill

Rock Drill Co.); J. M. Hume (Pettibone Mulliken Corp.); H. R. Stickel (White Motor Co.). Mr. Maloney is, of course, chairman of the board.

President's Address In his welcoming address at the Monday morning opening session President Horace Krause (Columbia Quarry Co., St. Louis, Mo.) gave a brief summary of important developments in and affecting the association during the past year. His report on business conditions and prospects, which is reported in detail later in this article, indicated that 1953 was a new record year, probably by a small margin over 1952. It also indicated a spirit of optimism among producers as the volume of demand for crushed stone in 1954 is expected to drop very little if at all.

The association, said Mr. Krause, is doing very well, financially and otherwise. Its membership was increased to 134 active producing companies during the year and further increase is anticipated. One of the new member companies, he mentioned, is in Hawaii and another is in Canada. The membership of the Manufacturers' Division increased to a record high of 104 companies.

SPANG



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Boyd's Report In his annual report on association affairs J. R. Boyd, administrative director, told of the work done during the year. This included management of all business and financial matters, preparations for the annual convention and exhibit as well as for directors, executive committee and other meetings, publication of the *Crushed Stone Journal* and the *Accident Review*, keeping members informed on Federal and other legislative developments, and membership and activity in many associations and committees. During the year also, he said, the final payment was made on the mortgage on the association's headquarters building.

In discussing national developments Mr. Boyd said that the Hoover Commission's move to get the government out of non-essential activities gives producers an opportunity to do something about government competition. He asked that producers notify the association of instances so that these can be brought before the commission.

Business Prospects The annual report of business conditions for the past year and the outlook for the year ahead was presented by President H. C. Krause. This is based on a summary of reports of regional vice-presidents. Following are the eight questions asked and their answers:

"1—How did volume of crushed stone business during 1953 compare with 1952? As a general rule, the districts showed very little change throughout the country, with the exception of the region served by the Great Lakes, where primarily it is chemical production serving the steel and chemical trades. There was an increase in that area of 20 per cent. Some of the districts had no change, and some had a slight decrease. The next increase, with the exception of the Great Lakes area, had an increase of 8.3 per cent.

"2—How did price level during 1953 compare with 1952? Two of the districts had no change, and in two others there was a slight increase. In the other districts there was an increase of about 5 per cent.

"3—What relation did volume of demand bear to capacity during 1953? That varied considerably, anywhere from 70 to 100 per cent. I would say the average would be about 80 per cent. However, in some cases it is partially due to improved production methods, due to lowered capacity, because in some of these areas where they reported 80 to 83 per cent in relationship to total ca-

pacity, the tonnage was identical to or similar to what it was the previous year.

"4—What percentage (approximately) of crushed stone business in your territory in 1953 went to (a) highway construction, (b) railroad ballast, (c) building construction, (d) chemical and metallurgical uses, (e) agricultural limestone, (f) rip-rap, and (g) other uses?

"The percentage for highway construction ran from 12 to 73 per cent, the lowest being in the area where chemical production is located.

"I think at one time most of us had quite large railroad ballast tonnages, but those figures ran from 2 to 17 per cent, with probably a weighted average of considerably less than 10 per cent of the total tonnage.

"It varied for building construction over the country. The maximum was 35 per cent, and the lowest in any region was 7 per cent, with an average of probably less than 20 per cent in the country.

"Under (d), chemical and metallurgical uses, in one region it was just a trace quantity, not enough even to be weighted as 1 per cent. In one region it was 1 per cent. Again in the Great Lakes it was 70 per cent, due to the steel and chemical and metallurgical production. The other districts ran 33 and 16 per cent.

"Rip-rap was exceedingly low percentage-wise. The maximum in any area was 2 per cent. Some reported it as zero. It was such a small percentage that it was not worth reporting in percentages. In other areas it ran from 2 to 8 per cent.

"5—Do you anticipate much change in this distribution during 1954? In the main the answers were "No change". There was a slight tendency toward increase in building construction volume, but in the main the answer was "No substantial changes worth noting."

"6—What is the prospect for crushed stone business for 1954? Will it increase or decrease from 1953? Again the answer, in the main was "No change". Some expected it to be a slight decrease, and in one area about a 4 per cent increase was expected.

"7—Has additional aggregate capacity been developed during 1953? Please state the nature of any additional aggregate capacity developed by you or competitors during 1953. In almost every case the answer was "Yes". In almost all regions it was in the form of permanent plants, not only additional plants but improvements in existing plants, and added portable production. In some areas

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the portable production was quite substantial.

"8—Please offer any further observations as to conditions in your territory which may be of interest. There wasn't a great deal of response to that because of the tremendous number of questions that have been asked previously, but there were a few things that we did have comments on. Some expected that eventually the total program would be of tremendous benefit. Others commented that in particular metropolitan areas there has been an increase in business."

In closing, Mr. Krause said that in some of the regions there were variaward up to 50 per cent in various areas although the whole region might be much the same as last year.

Safety Awards The general luncheon, which was presided over by H. E. Rainer, Federal Crushed Stone Co., Buffalo, N. Y., featured the presentation of the 1952 N.C.S.A. safety contest awards. The association was honored at the luncheon by the presence of J. J. Forbes, director, U. S. Bureau of Mines, who presented the awards to the ten winning companies which maintained accident-free records during 1952. Mr. Forbes, a long time leader in the field of mine safety, heaped high praise upon the winning companies.

The winner of the contest was the Bakerton mine of the Standard Lime and Stone Co., Bakerton, W. Va., having an impressive record of 177,946 man-hours without a lost-time accident. W. J. B. Houser, superintendent of the Bakerton mine, accepted the award for his company.

The nine other winners which received honorable mention certificate awards are shown in the poster illustration appearing on page 115. These companies ranged from 169,133 to 31,737 man-hours without a lost-time accident. A complete report of the results of this contest was published in the November, 1953, issue of PIT AND QUARRY.

In his report as chairman of the Accident Prevention Committee of N.C.S.A., Clarence Gustafson (Callanan Road Improvement Co., South Bethlehem, N. Y.) expressed great pride in the 1953 accident record of companies entered in the N.C.S.A. safety contest. In 1953, he said, only four lives were lost, as compared to ten in each of the two preceding years. If only one of the six lives saved was due to the work of the committee he feels that its efforts were fully justified. This record is all the more remarkable as there was an increase of over 1 million man-hours worked in 1953. Another achievement, the speaker pointed out, was the fact that 30 percent of the competing plants went the full year without an accident, as compared to 13 percent in 1952. Mr. Gustafson gave some of the details of the results of this contest which have already been reported in these pages and said that even better results are expected for 1954. He also told of his work as *Accident Review* editor.

N.C.S.A. Manufacturers Division board of directors for 1954. Top row: G. H. Keppel, Birdsboro Steel Foundry and Machine Co.; K. F. Lange, Link-Belt Co.; J. Malcolm Hume, Pettibone Mulliken Corp.; H. W. Newton, Barber-Greene Co.; W. E. Collins Jr, Atlas Powder Co.; C. Darrell Smith, Joy Manufacturing Co.; and G. C. Holton, American Cyanamid Co. Middle row: L. A. Rhodes, Jeffrey Manufacturing Co.; G. D. Fraunfelder, Easton Car & Construction Co.; H. R. Harrington, Goodyear Tire & Rubber Co.; Gilfry Ward, American Manganese Steel Div.; A. E. Schneider, Stedman Foundry & Machine Co.; J. W. Hardesty, Baldwin-Lima-Hamilton Corp.; and C. S. Weber, Thew Shovel Co.

Bottom: J. R. Boyd, administrative director, N.C.S.A.; L. A. Eiben, Northern Blower Co.; Wayne W King, W. S. Tyler Co.; B. R. Maloney, newly-elected chairman, E. I. DuPont de Nemours & Co.; Irwin F. Deister, retiring chairman, Deister Machine Co.; and Richard D. Ketner, General Electric Co.

Meeting of the N.C.S.A. board of directors on February 21.

Report of Engineering Director In his annual report, A. T. Goldbeck, engineering director of N.C.S.A., stated that during 1953 the association conducted or started on 47 separate technical projects. He described in detail several of the projects and briefly mentioned many of the others. In pointing out how the members are served, he first described the association's well-equipped physical testing laboratory, which is under the direction of Research and Testing Engineer J. M. Rice. The laboratory is equipped to perform necessary tests on aggregates, bituminous mixtures, concrete, and other materials involving the use of crushed stone.

The various research problems studied by the association originate in various ways, Mr. Goldbeck stated. Some are foreseen, others are pursued in order to determine how best to use crushed stone, and others to determine causes for certain physical phenomena. As one illustration the speaker discussed the association's *Bulletin 11* (published 28 years ago) published in order to overcome the problem of poorly designed concrete. Because of its importance, the bulletin was recently revised and brought up to date.

Mr. Goldbeck also touched on the important problem of expansion of concrete due to alkali-aggregate reaction. He indicated that the work done thus far shows that this is a very intricate problem which is very closely tied in with cement composition. Although the problem hasn't been solved in detail, ways are known of overcoming the expansion trouble. It is believed that the continuing hydration of certain constituents in cement may stimulate the alkali-aggregate reaction and that it would be desirable to use cement or cement admixtures which would minimize this production of hydration products within the concrete or would rapidly combine with them to render them harmless.

Another problem the association is actively engaged in is slippery pavements. The problem is very important, particularly to stone sand producers. Some possible solutions may be the addition of other and harder fine aggregates to the concrete or possibly the broadcasting of a hard aggregate on the concrete surface just prior to the finishing operation.

Research is also being carried on in bituminous concrete. One very promising development in the association laboratory has to do with the rapid determination of density of the finished mix. The method for voids determination in the compressed mix developed in the association laboratory permits a laboratory operator to determine the density of a mix in a very short time as compared with the old methods, and apparently with increased accuracy.

Next Mr. Goldbeck discussed the increasingly important problem of the durability of aggregates for use in both concrete and bituminous concrete. In concrete pavements air entrainment is now widespread, and in

N.C.S.A. safety committee. Seated: T. W. Jones, The New Haven Trap Rock Co.; C. A. Gustafson, The Callanan Road Improvement Co., committee chairman; and H. F. Yotter, General Crushed Stone Co. Standing: Whit J. Wise, Southwest Stone Co., Dallas, Tex.; H. H. Kirwin, Eastern Rock Products, Inc.; Seymour Fleming, New York Trap Rock Corp.; Horace C. Krause, Columbia Quarry Co.; H. E. Rainer, Federal Crushed Stone Co.; and Bruce G. Woolpert, Granite Rock Co.

Representatives from winning companies in the 1952 N.C.S.A. safety contest are: Top row (left to right): Horace L. Woodland, Warner Co. (Cedar Hollow plant), Devault, Pa.; Oliver C. Dietschler, General Crushed Stone Co., Jordanville, N.Y.; Burr Shaver, General Crushed Stone Co., White Haven, Pa.; Jesse Haney, Eastern Rock Products, Inc., Prospect, N.Y.; Edgar Z. Cole, General Crushed Stone Co. (Rock Hill quarry), Quakerton, Pa.; and Robert D. Brewer, The New Haven Trap Rock Co., North Branford, Conn. Bottom row (left to right): C. A. Gustafson, chairman, N.C.S.A. safety committee; C. F. Bass, New Haven Trap Rock Co. (Wallingford quarry), Middlefield, Conn; W. J. B. Houser, The Standard Lime & Stone Co., Bakerton, W.Va., the winning company; J. J. Forbes, Director, Bureau of Mines; and P. M. Hadley, North American Cement Corp., New York, N.Y., representing the Security Quarry at Hagerstown, Md. An additional safety winner not shown here was the M. J. Grove Lime Co., Stephens City, Va., represented by Charles E. Bass.

Exhibit listing winners in 1952 N.C.S.A. safety contest.

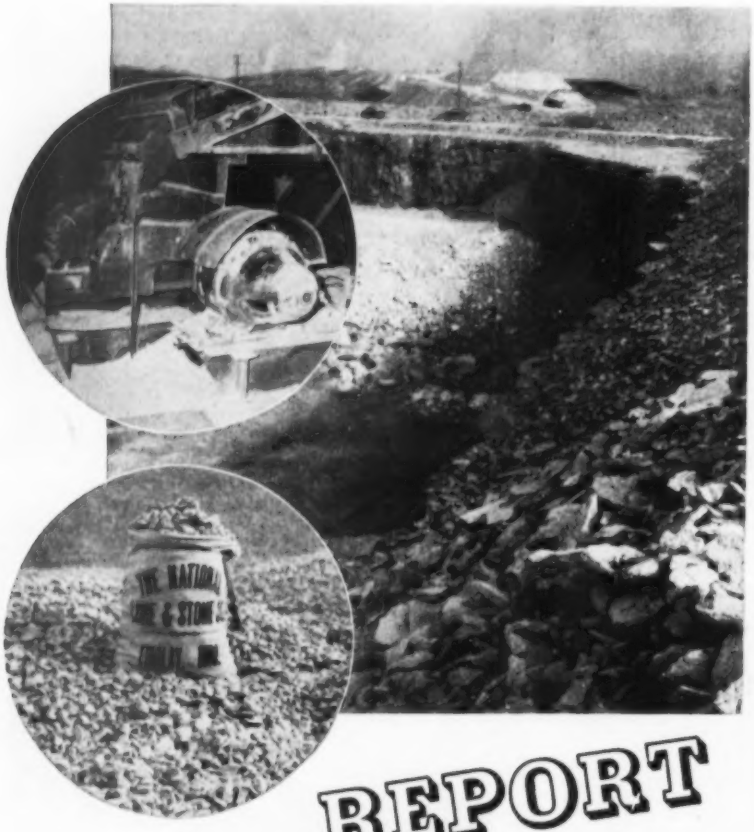
consequence, the durability of the mortar has been improved so greatly that, although it formerly was the least durable portion of the concrete, now in many cases it has become more durable than the coarse aggregate. Thus there may be a movement to bring about still greater concrete durability by a further improvement of the coarse aggregate. The speaker reported that a number of producers have been affected by this durability problem.

One very important problem in connection with the durability of aggregates has to do with bituminous concrete. Detailed investigations recently carried out by the association seem to indicate that a soundness specification need not be so severe for an asphaltic concrete aggregate as for that used in portland cement concrete, the apparent reasons being that (1) stone in an asphaltic mix is subjected to a more favorable pretreatment than when used in portland cement concrete, for it is first heated in a drier at 600 deg. F. to drive off the moisture so that very little, if any, remains in the pores; and that (2) these pores are waterproofed in the mixing operation so that water gains access to them with great difficulty and hence they do not become saturated to that dangerous degree necessary to bring about failure due to freezing.

Mr. Goldbeck reported that other projects carried on by the association included an investigation of cores from several quarry sites and advice as to the usefulness of the stone investigated; tests of stone sand for shape and soundness; tests of stone to determine if it met certain specifications; tests of samples of bituminous mixtures; crushing strength tests on stone; stripping tests of stone to determine its use for asphaltic concrete; concrete investigations on a particular stone; tests of relative value of ten different samples of screenings for macadam; Los Angeles tests on a particular stone; tests to determine compliance with Navy specifications; the design of bituminous concrete with given aggregates; concrete tests to develop data in connection with *Bulletin 11 on Concrete Proportioning;* soundness of natural sand samples; tests to determine suitability of a particular stone for concrete and bituminous concrete; complete stability and durability tests on a sample of bituminous concrete mix; and tests for flat and elongated pieces.

Field Engineer's Report In his annual report Joseph E. Gray, field engineer for N.C.S.A., deviated somewhat from his usual procedure in describing the work done and some of the most important problems encountered during the year on his "trouble-shooting" trips. This work, he explained, is usually on problems relatively rare in occurrence which are individually very important to the producer involved. During the past year, said Mr. Gray, his work for the most part was on problems involving the quality of crushed stone as measured by the usual physical tests. His report consisted of a brief description of the more important tests and a discussion of the tests in the light of specification requirements and the methods of production. This he hoped, would help more producers to anticipate their problems and thereby keep them small rather than let them develop to major proportions which require drastic and quickly applied remedies.

The abrasion test is one most widely used for quality and is required by all of the states but, according to Mr. Gray, there are wide variations in its application. The Deval abrasion test at best only measures the abrasion resistance of rock as it occurs in a deposit and has not been correlated with aggregate performance in modern service. It will



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GYRATORY CRUSHERS. The flexibility of Superior primary and secondary crushers in meeting a broad range of operating conditions is detailed in this *Allis-Chalmers* 31-page bulletin. Features of the crushers are shown and considerable space is given to general crushing data, hp requirements, etc. (1)

ELEVATOR BUCKETS. Cast malleable and Promal elevator buckets in 55 standard sizes for all types of materials handling are shown in this *Link-Belt* catalog. Information on the mounting of buckets on belts and chains is given also. (2)

JAW CRUSHER. Designed for the normal pit and quarry operation, the *Traylor* Type M jaw crusher is built in 8 sizes with capacities to 300 tph. The curved jaw plate and other features are described in detail in this 24-page booklet. (3)

EXPLOSIVOS. Usos de los explosivos y productos *Atlas* y sus métodos de aplicacion, 52 páginas catalogo, publicado por *Atlas Powder Co.* en español. Escriba a P&Q por su copia. (4)

BELT REPAIRING. How to splice and repair conveyor and elevator belting is shown in this 32-page *Goodrich* booklet. Step-by-step photos and detailed instructions on vulcanizing are given, with other valuable advice. (5)

GEAR MOTORS. Low speed electric drive in more than 25,000 different gearmotor models can be furnished by *General Electric.* The Tri/Clad 55 line gives "packaged drives" for every need, with output shaft speeds 780 to 5.7 rpm. ratings one to 30 hp. (6)

TAPERED ROLLER BEARINGS for normal and heavy-duty replacement on pit and quarry machinery are shown in *Tyson Bearing* literature. The bearings are available with diameters from 2 to 24-in. (7)

PERFORATED STEEL SCREENS made by *Cross Engineering* are shown in this literature. (8)

THIS IS GREAT! This maintenance guide issued by *Caterpillar* should pay big dividends to you as an equipment owner. An interesting, easy to understand cartoon-style will make it popular with every man in your organization. It covers earthmoving equipment—dozers, rippers, scrapers, shovels, wagons and cable and hydraulic controls (9)

BULK TRANSPORT of pulverant or granular materials is handled by *Fruehauf* bulk load trailers. They have a twin-screw for unloading and baffles to prevent load shifting. (10)

PLUG VALVES for many applications in the non-metallic minerals field, shown in this *DeZurik* catalog, feature an exclusive eccentric principle that eliminates seizing and sticking yet gives the tightest possible closure. (11)

TRACTOR SHOVEL. A "fleet of machines in one" is the way *Tractomotive* describes its HD-5G Tracto-Shovel (mounted on an Allis-Chalmers tractor). Buckets (one-yard size), dozer blades, bucket teeth, lift forks and other attachments lets the unit do the work of several machines (12)

TOUGH TRUCKS. "It takes a brute of a truck" to handle the needs of our field. *Autocar* tells about its heavy-duty, custom-built "brutes". (13)

ADJUSTABLE V-BELTS made for D and E belted drives are shown, with all details for their use, in this 8-page Veelos TD and TE v-belt catalog from *Manheim Mfg. & Belting Co.* (14)

HARDFACING ALLOYS are discussed in detail in this 48-page *Amsco* brochure. The proper selection of hardfacing alloys, and the use of repointer bars and shapes are among the features. (15)

DUMP TRAILERS. Semi-trailer dump units, in capacities from 8 to 24 cu. yd., are shown in this *Truck Engineering* literature. The TEC units are furnished with either a power-type fifth wheel or with pump installed on tractor for operating the trailer hoist. (16)

STEEL CASTINGS as large as 3000 lb. can now be made by *Farrell-Cheek,* this bulletin announces. The firm makes quality electric furnace carbon and alloy steel castings in a tremendous range of sizes to meet any needs in pit and quarry. (17)

CLINKER COOLER. Six-way saving can be effected in cement and lime manufacturing through the use of the Air-Quenching shaking grate cooler, this new 24-page *Allis-Chalmers* bulletin says. The unit can be installed with little or no remodelling expense. (18)

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HIGH CAPACITY SCREENS made by *W. S. Tyler* feature this 12-page bulletin. Shown are various models of Tyler screens, used for screening more than 300 different materials. (19)

WASHING & CLASSIFYING equipment for sand, gravel and ores is featured in this 42-page *Eagle Iron Works* catalog. A new tub design for screw washers that has an adjustable long weir, and new adjustable gate "splitters" for scalping tanks are among the features. (20)

MANGANESE PARTS for crushing and pulverizing equipment made by *Taylor-Wharton* feature this bulletin. Tisco 12½ percent manganese steel is used for such severe service areas as crusher mantles, concaves, jaws and cones, pulverizer parts, ball mill liners, etc. (21)

DIESEL ENGINE GUIDE. This *Harnischfeger* booklet explains the diesel engine and its workings in easily understood language, with drawings. (22)

KILNS, COOLERS, dryers, dust collectors designed and manufactured by *W. P. Heineken, Inc.* are illustrated in this folder describing the firm's services as engineers and fabricators. (23)

ENCLOSED MOTORS in the one-to-30 hp class appear in this bulletin on the new *General Electric* Tri-Clad line. All the latest improvements in motor manufacturing are combined in more compact units to serve a wide variety of pit and quarry needs. (24)

DIESEL POWER for automotive, industrial and marine needs highlight this 48-page *Cummins* catalog. The light-weight, high-speed models shown cover a range from 60 to 600 hp. (25)

JAW CRUSHERS. The complete *Farrel-Bacon* Line, with receiving capacities from 10x7 to 60x48-in., is described in this comprehensive 24-page bulletin. (26)

REPLACEMENT PARTS made of manganese steel for crushers, pulverizers, shovels, draglines, mixing machinery, screening machinery and many other pit and quarry units are described in this *Frog, Switch & Mfg. Co.* bulletin. (27)

OVERSHOT LOADERS. Normal loading cycles of 14-17 sec. are possible with *Austin* Overshot loaders this bulletin says. Engineered for Caterpillar 4-C and 6-C tractors, they have 1-1/3 and 2-cu. yd. buckets. (28)

BURNING CONTROL systems for kilns, dryers, furnaces and ovens are shown in this new 12-page *Bristol* catalog. Engineering specifications needed to choose the proper control "package" for a particular installation are given, with prices. (29)

HEAVY EQUIPMENT made by *The Pettibone Companies* run the gamut of pit and quarry needs—crushing, screening, washing, loading, materials handling, and bituminous plant equipment. It is sold under such well known names as Universal Engineering, Haiss, Speedall, Pettibone Wood and Hammermills. This Pettibone Mulliken catalog shows it. (30)

POWER TRANSMISSION units made by *Lovejoy* include flexible couplings, universal joints, and variable speed pulleys and transmissions. This brochure gives all specifications. (31)

"SHOVELS AT WORK" is the title chosen by *Caterpillar* to emphasize the versatility of its No. 6 and HT4 tractor-shovels in materials handling and related work. (32)

V-BELT DRIVE DATA. This interim bulletin gives in condensed form the data you need to calculate the hp capacity of a Texrope V-belt drive by the new method developed recently by *Allis-Chalmers.* All sheave and v-belt manufacturers have approved and accepted the belt hp ratings derived from this new formula. (33)

CONVEYOR PULLEYS in various types with diameters from 6½ to 36-in. are shown in this *Atlas Conveyor* literature. Faces widths from 14 to 44-in. are available. (34)

SUPERCHARGED DIESELS. The 6-cylinder *Buda* model 6-DAS-516 ranges from 70-hp at 1000-rpm to 165 at 2400. It has a 4-7/16-in. bore, 5-9/16-in. stroke and a 516 cu. in. displacement. (35)

CRANE-EXCAVATOR selection data fills this pocket-size *Wayne Crane* booklet. It contains information on major design and construction fundamentals with actual comparison charts to help in selecting the proper unit for the job. (36)

APRIL 1954

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probably continue to be used by many states but has been replaced to a large extent by the Los Angeles abrasion test. This test, said Mr. Gray, is a combination of impact and abrasion and is now required by 39 states. There is a definite relationship between the loss in this test and the service record of the materials used in concrete, bituminous construction and surface treatment but, he said, the specification limits being used in many states are unrealistic and are working hardships on some producers whose product has had excellent service records.

The oldest test on stone is the soundness test to determine ability to withstand exposure to weather and it is an acceptance test with fixed specification limits by 32 states. Mr. Gray described this test which, he indicated, is not a completely reliable measure of quality. The freezing and thawing test for aggregates has been advocated as a substitute but is at present being used in only one state. It is, however, widely used as a test for concrete. He said that there is no standard method of test; and—especially where air entrainment is used—this is causing a serious problem for producers. This test, according to Mr. Gray, appears to have more value in indicating soundness of stone than any other but the fact that it has not yet been standardized means that its use should be tempered with mature judgment.

The above, said Mr. Gray, are the primary tests for quality due to their universal use but there are others which may be written in specifications that can cause trouble for producers. One of these is potential alkali-aggregate reactivity. No source of commercial crushed stone has yet been proved to be detrimentally reactive but it is a threat which should be watched. It should be borne in mind, he said, that a potentially reactive aggregate is not necessarily detrimentally reactive.

Other requirements which can cause trouble are those with respect to deleterious materials, soft particles, shale, washing, and shape of particles. All producers, said Mr. Gray, should familiarize themselves with these requirements before quoting to supply stone under such specifications.

Mr. Gray also discussed the effect of methods of production on quality. The trend toward elimination of high faces by benching has brought about operational advantages but may have a pronounced effect on quality where there is a variation in the stone from top to bottom of the face. This is particularly true where the surface of the deposit is weathered or broken. It is suggested that a careful log be made of the quality of stone in a face, so that a study can be made of the effect of any proposed two-level operation.

Crushing, said Mr. Gray, influences quality in two respects—as to deleterious materials, and as to shape of particles. All crushers help to eliminate soft stone and deleterious materials as these reduce readily to finer sizes and may be eliminated. In some cases impact crushers have been beneficial in this respect. The problem of particle shape is more complicated, however, and flat and elongated particles are objectionable for most uses. Mr. Gray suggests that a producer having this problem first determine the amount of flat and elongated pieces in each size fraction as a product from each crusher. This will identify the machines producing the objectionable material and studies can be made to determine a solution. Sometimes the setting of the crusher can be changed, possibly blending certain sizes of recrushed stone will help, or a different type of secondary crusher can be installed. Any of these suggestions, said Mr. Gray, will decrease output or require outlay of capital so the tonnage involved must be considered before steps are taken. He strongly advised against offering to supply stone knowing that it will not comply with the specifications.

Stockpiling also affects the quality of the stone by segregation and the accumulation of dust and dirt. The only solution where this trouble is encountered is washing.

Percentage Depletion John F. Lane (Gall, Lane and Howe), general counsel for N.C.S.A. was scheduled to talk on current legislative developments but, because of the recent action of the House Ways and Means Committee, he concentrated on the principles for revision which had been adopted and their import to the crushed stone industry. The committee, he said, had been working for weeks on the most extensive revision of the Internal Revenue Code in 75 years, and had been releasing daily reports on the various changes made. Percentage depletion, said Mr. Lane, is only one of many subjects covered and all we know about it is what is covered in the first press release and this information is fragmentary and inconclusive.

It is clear, said Mr. Lane, that chemical and metallurgical stone keeps its 15 percent allowance. Dolomite, calcium and magnesium carbonates, etc., which had 10 percent, now get 15 percent when used for the above purposes, otherwise 5 percent. No stone now gets 10 percent. The committee also proposes additional changes in the present provisions relating to ordinary treatment processes and these are especially important to crushed stone producers as on them will hang the determination of where mining ends and stone processing begins. In his opinion it seems clear that the matter of identifying and classifying nonmetallic minerals for percentage depletion by end use is now the controlling notion of the committee; that the 10 percent category is completely removed for these

C. A. Sanborn, Lehigh Stone Co., Kankakee, Ill.; Paul M. Nauman and Daniel J. Miller, both of the Dubuque Stone Products Co., Dubuque, Iowa; and W. R. Sanborn, Lehigh Stone Co., Kankakee, Ill.

industries; and that the aim is to give stone a 5 percent rate except for some uncommon uses such as chemical and metallurgical.

Another intangible, according to Mr. Lane, is where the cutoff point occurs, and this will require a court decision under the present law. It is unfortunate in some ways, he believes, that the committee has stated that a primary reason for the changes is easier administration and collection of revenues. He also believes that the inclusion of such items as mollusks, whetstones, etc., gives ammunition to the opponents of percentage depletion. It is also bad in a political year that some industries will be hit hard by changes in rates or by ambiguities in coverage. Too many complaints from such producers, said Mr. Lane, could conceivably reopen the whole subject of percentage depletion.

Salesmen Needed An excellent and timely inspirational address on the need for selling and salesmen was given by Ralph W. Carney, a successful business man. There is, he said, a serious shortage of engineers, but we are short 600,000 trained salesmen. Very few men entering college intend to be salesmen, but half of them end up selling; more should be urged to aim and prepare for a sales career. It is selling, he said, which must keep the national income near the present level; even a 10 percent drop might trip off a depression. We can't legislate our way out of a depression but we can sell our way out.

According to Mr. Carney, 80 percent of retail salespeople were in school in 1944 and have had no experience in a tough, competitive market. Older salesmen have forgotten much of what they once knew and are not in shape for an old-time scrap. We complain about the lower quality of the help we now have, but owners of businesses have eased up on the services they formerly rendered to customers. Most salesmen, he said, have been getting commissions they haven't earned and haven't bothered to know the product they are selling. A third of our population was born into a something-for-nothing age and wants security without effort. This attitude must be changed if we are to maintain our present high standard of living.

Clarence Manion, former dean, University of Notre Dame College of Law, and H. A. Clark, president, Consumers Co., Chicago. Mr. Clark presided at the N.C.S.A. Greeting Luncheon at which Mr. Manion gave an inspiring talk entitled "The Constitution Is Your Business". At the time of the meeting, Mr. Manion had loomed into the national limelight as a result of having been relieved from his governmental post as chairman of the Commission on Inter-Governmental Relations a few days prior to the convention.

A. T. Goldbeck, N.C.S.A. engineering director; J. Reid Callanan, Callanan Road Improvement Co., S. Bethlehem, N.Y.; J. R. Boyd, N.C.S.A. administrative director; and Charles R. Callanan, Callanan Road Improvement Co.

OPERATING SESSION

G. D. Lott Jr. (Palmetto Quarries Co., Columbia, S.C.) presided at a separate session of the convention for operating men and equipment manufacturers. The discussion was led off by W. F. Alford (Consolidated Quarries Corp., Decatur, Ga.), who presented a paper on new developments in the field of quarry drilling.

Quarry Drilling Under the heading of primary drilling, this speaker made reference to the following characteristics of jet piercing:

Speeds vary according to the spallability of the rock. Quartzite, sandstone, granite, and dolomite are classed as excellent spallers, while low-silica and coarse-grained granites have a tendency to melt rather than spall.

The process involves burning a liquid hydrocarbon (such as kerosene) in combination with high-purity oxygen to produce a flame having a temperature of 3,500 to 4,000 deg. F. and a gas velocity of about 6,000 f.p.s.

The 5-in. burner used in quarry work operates at an hourly flow rate of 10,000 cu. ft. of oxygen, 40 gal. of kerosene, and 800 gal. of water. Water acts as a coolant to protect the burner nozzle, and serves to quench and embrittle any material in the rock which may become fused by the flame. Steam generated from the water also helps carry particles of disentegrated rock out of the hole.

The following information was presented in regard to jet piercing performance: average speed at 30 ft. per hr.; maximum speed 50 f.p.h. for one continuous hour; maximum hole depth 140 ft.; average diameter of hole 6½ in.

Another rig for primary drilling was described by Mr. Alford as a "much improved" type of wagon drill. Some of its characteristics follow:

1) Tractor mounting with four speeds forward and one reverse, and tramming speeds ranging from 3.70 m.p.h. in low gear to 13.65 m.p.h. in high gear.

2) A hydraulic system for raising and lowering the feed from horizontal to vertical, for operating three jacks to level and support the unit in operation, and for supplying the double-acting cylinders used to position the feed.

3) Feed is 26 ft. 6 in. long, with actual feed travel of 23 ft. 6 in.

4) Capacity is 3½ to 4 in. (4½ in. using tungsten carbide insert-type bits). On 4-in. holes in granite

the drilling rate ranges from 6 to 8 in. per minute. Normal depth is around 50 ft., but the unit has been used to depths of as much as 75 ft.

The speaker described the Travel drill as a self-contained secondary-drilling unit having a 230-c.f.m. diesel-driven compressor and a trolley-mounted operator's control chair which travels on a 40-ft. boom. A self-propelled chassis carries the entire assembly. The chair and other appurtenant apparatus operates a 3-in. drifter with a 4-ft. screw feed. The operator raises the boom from the quarry floor to a height of 33 ft., positioning the boom over the muck pile. All drilling and travel operations are controlled from the operator's chair.

In one quarry a Travel drill is reported to have eliminated six jackhammers, and to have drilled 55 f.p.h., including moving time. One of the main advantages of this machine is the fact that comparatively inaccessible large rocks may be drilled without exposing men to serious hazards.

During the question and answer period following Mr. Alford's formal presentation additional information was brought out concerning the several types of equipment he had discussed.

On jet-piercing: the advantage of this type of drilling is in respect to speed rather than cost; the process requires 90 percent plus oxygen for best results; the method has been field tested for blast holes down to 2 in. in diameter; burners have been developed for secondary drilling of holes down to 1½-in. diameter.

On the Travel drill: a two-man crew handles loading operations, allowing a lapse of 5 or 6 minutes to permit the stone adjacent to the holes to cool off; loading can be done from the cage on the boom, but it is more economical to use lightweight ladders.

Warehousing Problems H. D. Perry, Southwest Stone Co., Dallas, revealed a number of the features of the inventory control procedures which his company has developed.

During known slow months of production various types of equipment are inventoried in all plants until complete coverage has been achieved. This practice leaves storekeepers free during busy periods to issue materials and replenish stocks.

New forms have been developed for purchasing and warehousing for the purpose of assuring that the purchasing department will be better informed about all aspects of the end use of equipment and supplies.

C. E. Marston and Myrton Judkins, Judkins Ltd., Nuneaton, England. Mr. Judkins showed a colored movie of his company's quarrying operations.

Since an analysis of these forms, actual samples of which were projected upon the screen in the meeting, constituted a major portion of Mr. Perry's talk, a further description in these pages must be postponed until such time as illustrative material can be obtained.

Screen Selection Montagu Hankin Jr. (North Jersey Quarry Co., Summit, N. J.), discussed some of the problems involved in selecting the proper screen deck to meet specifications. Some of the conclusions indicated by Mr. Hankin are:

1) Final selection of screen sizes must in most cases be based upon the results of field experimentation. The prediction of capacity and sizing efficiency is more closely related to art than to science.

2) The permissible undersize in oversize has a bearing on cloth selection, but of even more importance are the specification tolerances relative to the top limits passing various sieves. Selection is also affected by whether the sieve openings are round or square.

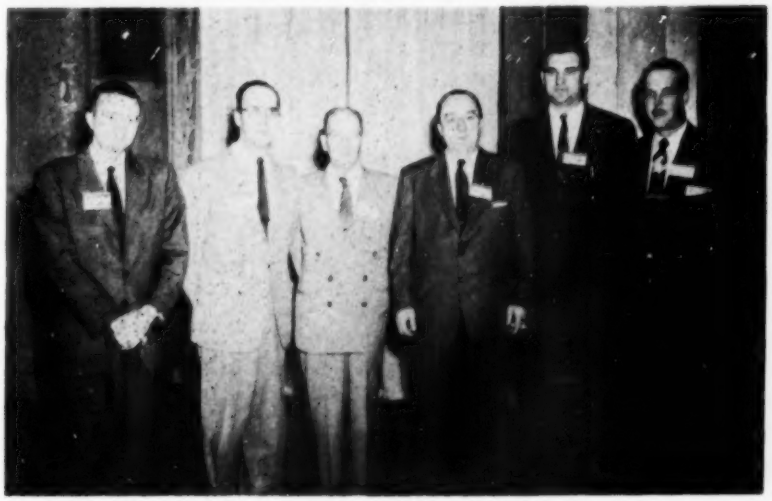
3) In contrast to the great care and accuracy possible in laboratory screening, plant screening is a "wild and chaotic affair".

4) Some of the many factors which can affect the product of the individual deck of a sizing screen: the type and setting of crusher which precedes the screen; the size, weight, purity and uniformity of the quarry product; the throw, speed and angle of inclination of the screen; the direction of rotation of the screen shaft; the rate of feed, as well as the gradation, moisture content and abrasiveness of the material; the proportion of undersize, oversize and of near-mesh particles in the feed; the particle shape of the near-mesh portion of the feed; and the velocity and angle at which the material reaches the screen deck.

5) Demand and profit have at least as much influence as operating conditions upon the selection of deck sizes.

6) If an operator shifts from a square cloth to a slotted cloth, the narrow dimension recommended will be about five percent less than the square opening formerly used. If the material is slabby, the slots should

Participating in the Operating Session were (left to right) G. D. Lott Jr., Palmetto Quarries Co., Columbia, S.C., who presided; John W. Moffat, Inland Lime and Stone Co., Gulliver, Mich.; E. B. Ilyus, consulting engineer, Roanoke, Va.; Edward J. Nunan, Federal Crushed Stone Corp., Buffalo, N.Y.; Montagu Hankin Jr., North Jersey Quarry Co., Summit, N.J.; and H. D. Perry, Southwest Stone Co., Dallas, Texas.



run normal to the flow; if the product is cubical, the slots should parallel the flow.

Chute Design In his paper on *Chute Design*, E. Burwell Ilyus, consulting engineer, Roanoke, Va., pointed out that, unfortunately, chutes are generally installed without much thought or planning in mind. As a result difficulties generally occur, such as plugging, excessive wear, and obstruction to working space.

According to Mr. Ilyus, a properly designed chute should readily transport material from point to point without changing the gradation or size of the material; further it must be self cleaning and should be fabricated of materials that will keep wear and maintenance to a minimum.

He pointed out that in designing a chute consideration should be given first to the material being handled, including its flow characteristics (whether it is sluggish, in a slurry, free flowing, tends to mat, or is degradable); its wearing characteristics (whether it is abrasive or corrosive); its fineness (can it be windswept, is it explosive); its moisture content; its size gradation and particle shape; its chemical analysis; and its angle of repose. All of these check points aid in determining the type of chute, method of feeding, angle of slope, method of discharge, and the materials used in fabrication. For example, a chute carrying moist material generally must be mounted on a 10 to 15 degree steeper slope than if it were handling dry material.

Next the method of feeding must be considered. The speaker stated

John Prince Jr., Kansas City Crushed Stone Co., Kansas City, Mo., and J. E. Burke, Centropolis Crusher Co., Kansas City, Mo.

that the loading point of a chute is subject to considerable wear due to the velocity and force of the material discharging from a conveyor belt or screen. In addition, objecable segregation and breakage of material may occur. Because of these facts, Mr. Ilyus strongly recommended the use of a stone box at the transfer point, where material strikes material, thereby eliminating impact abrasion on the chute liner. This method also eliminates tapered sides of the chute and makes it possible to standardize on chute fabrication so that chute sections can be interchangeable. Another advantage of the stone box method is that the chute may be mounted at any directional angle with respect to the feed.

The speaker next discussed types (and shapes) of chutes, pointing out that the flow characteristic of the material largely determines the shape of the chute. Fine materials such as dry sand flow easier and with less segregation in round bottom chutes or pipes. Materials of larger sizes that are free-flowing can best be carried in rectangular shaped chutes. For carrying sluggish material and material that has a tendency to mat, chutes should have sides mounted at an angle greater than 90 deg. in order to be self-cleaning; and in some cases it was necessary to provide an open V-shaped bottom instead of a flat bottom plate.

The condition of the sliding surface has a decided effect on the slope of the chute, he went on. Material will slide over a polished surface much easier than over a rough surface. Therefore, the bottom plate should be given serious thought.

If the material is not abrasive or corrosive and the chute is in continuous use, then an open top chute with steel bottom liner plate is satisfactory. However, if the chute is in only intermittent use, permitting a steel bottom plate to rust or corrode, then the chute should be either totally enclosed or the bottom plate should be of a non-rusting or non-corroding material.

In discussing wear, Mr. Ilyus pointed out that abrasion is probably the worst enemy of chute liners. If the material is abrasive, there are several methods of decreasing the wear along the total length of the chute liner.

One method is to install angles on the bottom plate of the chute. The size of the angles and the spacing is determined by the size of the material handled by the chute. The angles may be mounted across the chute bottom or in the form of a V. With this method the material slides on material and will not wear the bottom plate. However, the angles may be subject to wear at the top edge. Since in this case the material slides on material, the ease with which it slides is different than when sliding on a smooth bottom. Therefore, the slope on which the chute is mounted usually is steeper than when no retarding angles are used.

This method also may be used in long chutes to control the speed with which the material slides down the chute, as well as any tendency toward segregation and vibration caused by excessive speeds.

Another method of reducing the effect of abrasion is to use a liner of some material that is abrasion resistant to the particular material handled. Some of these are cast iron, cold rubber, special alloy steels, and hard wood. The most economical

Members of the New York Trap Rock Corp. present at the convention included: Standing, left to right: Robert Mead, Clarence Stetser, William Ferguson, Wilson P. Foss III, L. F. Miller, John Kringel, and Thomas Murray. Seated, left to right, are George Foster, George White, F. J. Buffington, A. W. Komonchak, Seymour Fleming, and Edward Sullivan. Mr. Foss, president, presented a paper on his company's outstanding public relations program.

type of liner can be determined only by knowledge of the material handled and the conditions under which the plant is operated.

Mr. Ilyus next discussed other than straight-sided chutes, for example, hoppers under screens and vertical chutes. He said that all the factors which are taken into consideration in chute design also should be considered in hopper design. However, there is an additional factor which is very important, i.e., the slope of the sides and the angle formed where the side plate joins the front or back plate—the valley angle.

Concerning the vertical chute, when material must be dropped vertically for any distance, Mr. Ilyus recommended a stone ladder. This device is designed to fit the particular material so as to eliminate breakage, segregation, and to keep it from being wind swept. For large material it is usually only necessary to build a square open structure with baffles extending half the width, and installing a back plate so as to form pockets to hold the material. The baffles usually are spaced a distance equal to the width of the structure. With the material falling on material, the rate of fall is controlled, and breakage and segregation are eliminated.

However, when handling fine material which could be wind swept, the ladder should be enclosed on all sides. If the ladder is to extend down into a bin or storage pile, counterbalanced doors may be mounted on the sides, which would be self-opening as the height of the material storage pile increases.

The speaker then discussed the discharge end of the chute, which he said is often overlooked in chute designs. In order to control the discharge from the chute, a discharge hood should be incorporated in the chute. This will not only control the point of discharge and direct the material to the desired location, but will assist in eliminating breakage and segregation. If the chute is to feed a conveyor or a screen, then a stone box should be built into the discharge end of the chute, he added.

Plant Safety In a very comprehensive report, John W. Moffat, superintendent, Inland Lime and Stone Co., Gulliver, Mich., discussed *The Place of the Superintendent in the Prevention of Accidents.* He stated at the outset that the superintendent's role is to plan or assist in planning the proper safety program and to supervise the implementation of the safety program adopted. Mr. Moffat then discussed some of the approaches to safety his company has found to be effective.

W. T. Spencer, Indiana State Highway Commission, Indianapolis, Ind., who discussed construction features of the 1953 Indiana test road, and Joe E. Gray, N.C.S.A. field engineer.

He said that analysis of accident reports indicates that practically all industrial accidents are caused either by unsafe conditions, unsafe practices, or a combination of both, with unsafe practices being the most important. Unsafe conditions can be eliminated by adequate guarding, thorough inspection of new equipment, proper maintenance, use of adequate protective equipment and clothing, etc. Unsafe practices can be eliminated by training of employees, continual reminding by the foremen, safety meetings, prizes, competitions, posters, signs, bulletins, letters and communications from higher management, publications, newspaper publicity, first aid classes, lunches and dinners, safety suggestion programs, and many others. He added that variety is necessary to any effective safety program and that methods must be changed from time to time.

In line with employee training, he stated that his company has prepared a 52-page *Safety and Work Rule Book* which prospective employees are requested to study before being hired. The book emphasizes that failure to regard the rules with sufficient importance subjects the offender to disciplinary action or discharge. When the employee is first hired, he receives safety instruction from the foreman covering the job he is to do as well as other safety instruction pertaining to the department in which he will work. From that point on each employee must be kept thinking safety at all times. Continual reminding can be the most effective method of eliminating unsafe practices, he emphasized.

Next Mr. Moffat considered the causes of accidents, pointing out the degree of supervisory control which can be exercised for each cause. They are:

(1) Employees' ignorance of existing hazards—the foreman should familiarize them with the hazards of his department.

(2) Physical shortcomings — only the foreman can determine an employee's shortcomings for a specific job.

(3) Inattentiveness (the foreman is best able to tell when one of his men is not giving his job the proper attention.

(4) Indifference to familiar hazards, which is particularly true of older workers — the foreman must continually remind the employee of hazards.

Another major point brought out

The General Crushed Stone Co. was well represented at the convention. Seated in the second row are D. C. Hickey Jr., construction engineer; G. E. Schaefer, district sales manager; Redington Moore, secretary-treasurer; O. E. Benson, president and general manager; Otho M. Graves, chairman of the board; A. G. Seitz; and John Rice Jr., vice-president.

A. G. Seitz, General Crushed Stone Co., Syracuse, N.Y., and James Savage, Buffalo Crushed Stone Co., Buffalo, N.Y., treasurer of N.C.S.A

Clarence Camp II, L. B. Lovett, and B. M. Craig, all of the Camp Concrete Rock Co., Ocala, Fla.

by the speaker was that no safety program can function effectively without support, both financial and moral, from the top level of any organization. Inland Steel Company has recognized this fact, and consequently has adopted the policy of **Safety First — Quality Second — Production Third.**

Tricks of the Trade One of the major features of the operating session was a report given by Edward J. Nunan, sales engineer (Federal Crushed Stone Corporation, Buffalo, New York) on the subject *Tricks of the Trade*. Mr. Nunan discussed in detail a number of devices, methods, etc. used by various producers to increase the efficiency of operation. This was the first time this sort of presentation was given.

Mr. Nunan first discussed a large electrically-driven portable air compressor developed by the Carbon Limestone Company, Lowellville, Ohio, in 1951; the unit was built in lieu of the company having to relocate a stationary compressor house. The relocation would have cost about $50,000.

The unit consists of an 830-c.f.m. Ingersoll-Rand compressor complete with water jacket cooler and air receiver, which are enclosed in a steel house mounted on a truck trailer.

By eliminating the stationary setup and hence the necessity of working on extensive pipe lines, the result has been a substantial drop in quarry man hours and particularly in overtime hours. Furthermore with hot, clean air going into the drills, drill maintenance cost has been reduced substantially.

Mr. Nunan next discussed a problem concerning low-head vibrating screens, which was reported by an Eastern producer. Trouble was experienced with the wear and breakage of the tension springs on these screens. The solution was found by substituting rubber bands cut from old 14:00 x 24 inner tubes for these springs; these rubber bands hold the screen in exact position, and very seldom need replacement.

The speaker continued with a report on a constant-level crusher feed control developed by Eastern Rock Products, Inc., Utica, N. Y., which insures a constant choke feed to the crusher opening. The feed to the crusher is *via* a conveyor belt, which is driven by a special high-slip low-current motor designed for instant starting and stopping. The motor runs when the magnetic switch controlling it is energized by a 110-v. circuit that is closed by a mercury switch in series with the circuit.

The mercury switch, housed in a protective case, is attached to a hinged bracket and is hung pendulum style at the point of flow where stone fills the crusher feed opening. When the feed opening is empty, the pendulum hangs down vertically and the level of the mercury in the switch is such that it closes the circuit, thus starting the belt.

Material reaching the crusher at a rate in excess of its capacity soon builds up around the feed opening, contacts the pendulum and swings it, thereby causing the mercury switch to break the circuit and stop the belt.

Next the speaker reported on three suggestions submitted by the Bethlehem Steel Co., Bridgeport (Pa.) quarry. The first concerned the use of air starting motors on quarry trucks, which were developed because of the recurring failure of truck electrical systems, especially during cold weather. With air outlets installed near the truck parking area, starting trucks on cold winter mornings with this system is no problem. The air starter turns the truck engine over until the engine gets warm enough to start. If necessary, the first truck started can furnish the air to start the remaining trucks. The brake air tank is of sufficient capacity to start the truck under normal conditions and weather. From a safety standpoint, the air starter eliminates one of the greatest potential fire hazards that can be found in trucks, namely, the shorted battery cable.

The next suggestion concerned the installation of shovel wire rope cables at the Bridgeport quarry. There shovel hoist cables are ordered spooled in an unusual manner, that is with a loop at its center point, fastened to the reel lagging and then wound on the reels so that both ends appear on the outside of the reel. The ends are tapered and welded with 3/8-in. wire rope becket loops attached.

Two 3/8-in. wire ropes of proper length are installed in place of hoist rope. Each is attached to the drum, and the other ends are attached to becket loops of hoist cable. This enables the operator to raise the hoist cable over the head sheaves and down to the hoist drum. This eliminates any possibility of the hoist rope coming in contact with the ground.

The becket loops also are very useful in attaching the cable to the hoist drum. In addition this method eliminates the necessity of having several men climbing up the shovel boom, creating a potential safety hazard.

The final suggestion from the Bridgeport quarry concerned air hose coupling, which is similar to the type used by railroads to connect either hose or pipe lines transporting compressed air. This makes for rapid disassembly of lines when preparing for a secondary blast. The air lines are assembled in 100-ft. lengths with 1-¼-in. pipe nipples on each end; the air brake coupling is then screwed into the nipple.

The next suggestion Mr. Nunan discussed was reported by the Lynn Sand and Stone Company, Swampscott, Mass., and concerned the use of concrete pipe pole anchors on the quarry floor for securing power line poles. The pole anchor (called a "doughnut") consists of a 60-in. concrete pipe with a 15-in. concrete pipe as a pole socket in the center; the smaller pipe is secured with a layer of concrete in the bottom. The rest is filled with screenings for ballast to within 6 in. from the top, and then a layer of concrete is used for a cap. The pole is held in place by means of wooden wedges. The method has proved successful and reasonable in cost (about $100).

The speaker concluded with a discussion of the liquid dust control system used at the General Crushed Stone Company's Rock Hill, Pa. Quarry, which has been in service since October, 1950. The system utilizes compound M-R by means of special proportioning equipment in order to obtain maximum wetting and penetration of the spray; this makes it possible to supress the dust throughout the plant while utilizing a minimum amount of moisture.

The speaker reported that this method of dust control has proved to be highly efficient, because by suppressing the dust at its source, before it can become airborne, the dust nuisance ordinarily created at the crushers, at the transfer points of conveyors and bucket elevators, and at the screens, has been virtually eliminated.

British Plant Quarrying in England, with evidences of American influence, was shown in a color motion picture presented by Myrton Judkins, head of Judkins Ltd., which has quarried Tuttle Hill, Nuneaton, for more than a hundred years. The site has produced stone since the days of the Romans. Judkins produces crushed stone and ballast and has two bituminous plants.

Modern quarrying methods adopted in recent years have reduced the work force from 97 (in 1939) to 32 today. Output has been doubled and significant improvements made in operating efficiency and in the quality of the quarry's output as a direct result of Mr. Judkin's visit to plants in South Carolina and Georgia during 1950, he told his American listeners.

Tuttle Hill is an outcrop of Cambrian quartzite, quartz-diorite and pre-Cambrian basalt. Beds vary from 18 in. to 4 ft. thick. The stone has a crushing strength of 46.760 p.s.i.

Interesting sidelights in the film were the steps taken by Judkins for the welfare of its employees. Rock gardens, lawns, a tennis court, toilets and showers, and similar comforts are provided. The 25-ft. quarry road is bituminous surfaced, curbed, and edged with grass, trees, shrubs, and flowers.

A. L. Worthen (New Haven Trap Rock Corp., New Haven, Conn.) who had visited this operation and was responsible for bringing the picture to the convention, commented on the beauty of the English countryside and the landscaping and housekeeping which put these operations in harmony with the surroundings. He introduced C. E. Marston, director of Judkins Ltd., and Myrton Judkins, managing director, who gave the commentary to the picture.

Public Relations A noteworthy paper entitled *A Public Relations Program* was presented by Wilson P. Foss III, president, New York Trap Rock Corporation, whose company has pioneered and has done an outstanding job in improving public relations at the community level. Recognizing the growing importance of this field, Mr. Foss reported that his company recently hired an advertising agency to handle this end of the business, whose main function is to make the community conscious of the role being played by the company, both on local and national levels.

At the outset the speaker emphasized the importance of using a direct positive approach in selling the company to the community. This can be done partly through the use of a comprehensive publicity program, in which local company affairs are played up. In addition the top management including superintendents should be public relations conscious, taking part in many civic affairs. Contributions to worthwhile charities should also be stepped up.

Mr. Foss then discussed the "Trap Rock Story", a pamphlet recently prepared by the company, which gives a clear picture of the company's entire operation and its place in the community. He then presented a sample Rotary Club speech, using slides taken from the pamphlet to illustrate. The speech emphasized the complexity of the quarrying operation and stone plant operation, the dust-free condition of the stone plant, the safety measures taken, the company's policy to preserve the scenic beauty along the Hudson River, the economic function of the company (in terms of weekly payroll paid to community employees and of taxes paid yearly), and other items.

The speaker also announced that his company will unveil a new scow during late spring. The occasion will be marked by an elaborate display open to the public, in which a number of exhibits pertaining to the firm's operations will be shown.

Mr. Foss concluded by stating that public relations is good business. The expense, even for a major comprehensive program like his company's, is negligible, amounting to less than 2 mills per ton produced.

Indiana Test Road W. T. Spencer, soils engineer, State Highway Department of Indiana, discussed *Construction Features of the 1953 Indiana Test Road.* He stated that a test road was built in south-central Indiana for the purpose of comparing flexible and rigid pavements, as authorized by the Indiana legislature in 1951. The pavements are connecting and have the same soil types and conditions, and are subject to similar traffic. The road, which totals about ten miles in length, was opened to traffic during the latter part of 1953.

Before the project was started, both the Portland Cement Association and the Asphalt Institute were asked to make recommendations for the design and construction of their respective projects, with the stipulation that if these recommendations meet with the approval of the highway department, they would be incorporated in the contract.

The thickness of the concrete pavement is in accordance with P.C.A.'s publication entitled *Concrete Pavement Design.* The section consists of a 9-in. uniform concrete pavement on a dense-graded granular sub-base of either 5 in. or 6 in. depending on the subgrade soil type.

The flexible pavement design was based on CBR curves developed by the U. S. Army Corps of Engineers and the soil group index thickness criteria developed by the Bureau of Public Roads. The section selected was 5 in. of bituminous material on 8 in. of water-bound macadam with 6½ in. of open graded, granular subbase—a total thickness of 19½ in. The rigid section was constructed using normal equipment; dry-batched cement and aggregates was trucked in from a nearby central proportioning plant. The flexible section stipulated the use of a 50-ton heavy pneumatic compactor and a multiple shoe vibrator.

Both projects were well designed, and well built, with an intensive testing program following throughout construction. These projects should accomplish the original intent of evaluating the characteristics of the two pavement types, he concluded.

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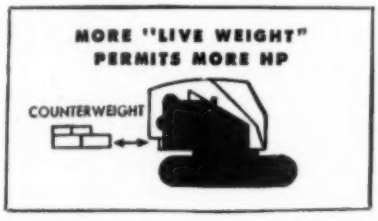

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Report on Current Labor Developments

By S. HERBERT UNTERBERGER
S. Herbert Unterberger and Company
Industrial and Labor Economists
Washington, D. C. — Philadelphia, Pa.

another P&Q exclusive

THE NEWLY revised National Labor Relations Board has taken a fresh look at the policy governing the severance of craft groups from established collective bargaining units and has come up with a set of rules under which it hopes "fewer groups will be severed, but that, at the same time, the principle of craft independence will be maintained".

The question of what to do if a particular craft (such as the machinists, the carpenters, or the electricians) wants to be represented by a separate union after it has already been included in a bargaining unit which also may include other crafts and production workers has always been a very difficult one. Employers have generally been of two minds about whether they should favor the carving out of craft units. They have seen advantages in the fact that if their employees are represented by more than one union, the possibility of an ill-considered union action is somewhat reduced. Also, two or more separate unions may have less strength than one solidly organized, disciplined group.

On the other hand, dealing with several unions is certainly more bothersome and difficult than dealing with only one. Also, if the key craft workers are organized separately, a strike called by them can shut down the whole establishment even if all the other workers are satisfied and ready, able, and willing to work.

Under the Wagner Act, in cases where craft groups sought to have separate representation, the National Labor Relations Board's practice was to require proof showing that the craft group had maintained its identity during the period in which bargaining had been on a wider basis; or that it had otherwise demonstrated a consistent desire to be dealt with separately; or that no consideration was given to the merits of a craft unit at the time the broader unit was established. Using this rather tight rule, the Board was able to turn down most requests for severance of a craft unit.

The Taft-Hartley Act specifically required a change in this rule when it stated, "The Board shall not . . . decide that any craft unit is inappropriate . . . on the ground that a different unit had been established by a prior Board determination, unless a majority of the employees in the proposed craft unit vote against separate representation." This brought a spate of requests, particularly from A. F. of L. unions, many of which are organized specifically along craft lines. Many unions would try to capture a craft out of a larger bargaining unit if it thought it could win an election, even if it did not have any particular history of representing employees in that craft.

The attempt to carve out units, particularly on this opportunistic basis, was, in many cases, disruptive of stabilized labor relations. The pre-Eisenhower National Labor Relations Board found it necessary to permit many craft unit elections, but also denied a great many—not on the ground that a different unit had been previously established, but for other reasons. For example, in four entire industries—basic steel, aluminum, lumbering, and wet milling — they permitted no craft unit severance on the ground that their operations were a highly integrated production process and that the prevailing pattern of bargaining was industrial in character.

In the recent case in which the Board enunciated its new policy, three unions—the Mine Workers, the Chemical Workers and the Smelter Workers—all wanted the election to cover all the production and maintenance workers in the plant. These are all industrial unions which generally operate on this overall basis. The employer also wanted the election to cover this overall unit. The Electrical Workers sought to sever all the electricians. The Operating Engineers sought a separate unit of the power division of the engineering department. The Machinists sought three separate bargaining units which would consist of (1) pump packers and oilers, (2) riggers, and (3) toolroom keepers.

In announcing its decision, the N.L.R.B. announced the following policy:

1. Because its members feel that the right of separate representation should not be denied a craft group merely because they are employed in an industry which involves highly integrated production processes and in which the prevailing practice of bargaining is industrial in character, they will not extend the practice of denying craft severance on an industry-wide basis. (However, they have not abandoned this practice in the four industries in which it was previously established.)

2. Carving out of a craft unit will be permitted where a "true craft group" is sought and where the union seeking to represent it is one which traditionally represents that craft. The Board gave its definition of a "true craft unit" as follows: "A true craft unit consists of a distinct and homogeneous group of skilled journeyman craftsmen, working as such, together with their apprentices and/or helpers. To be a 'journeyman craftsman', an individual must have a kind of degree of skill which is normally acquired only by undergoing a substantial period of apprenticeship or comparable training . . . In addition, to meet the requirements for severance under the Board's new rule, we shall require that all craftsmen of the same type in any plant, except those in traditional departmental units, must be included in the unit. By like token, employees who may work in association with the craft but not in the direct line of progression in the craft will be excluded . . ."

3. Carving out of a departmental unit will also be permitted where by tradition and practice it has acquired craft-like characteristics. In this case, the Board will require strict proof that the departmental group is functionally distinct and different and that the union seeking to represent it is one which traditionally devotes itself to serving the special interest of the employees in question.

Applying these rules to the case at hand, the Board granted the Electrical Workers' request for an election in a separate unit covering electricians because they comprise a traditional craft group performing distinctive and typical craft tasks and because this union traditionally and historically represents this craft.

The Board also granted the Operating Engineers' request for an election in a separate unit covering the employees in the power division, although they are not craftsmen, because they are an appropriate departmental unit and because the union historically and traditionally represents such powerhouse units.

The Board denied the Machinists' request for an election on three separate bargaining units — pump packers and oilers, riggers, and toolroom keepers—because they do not constitute an appropriate unit by any standard. Presumably they are neither true craft groups nor proper departmental units. The Board chastised the union somewhat when it said, "We conclude that the IAM

(*Continued on page* 141)

N.A. L. I. Convention in Chicago Draws Record Attendance

Operating problems and promotion are featured

another ON THE SPOT report

The National Agricultural Limestone Institute, Inc., held its annual convention at the Blackstone Hotel, Chicago, Ill., on February 19 and 20, 1954. Over 400 producers of agricultural limestone and their guests attended, a new record. This excellent showing was credited partly to the holding of the convention in a central location and partly to the fact that arrangements had been made for those attending to visit the machinery exhibits of the N.S.G.A. and N.C.S.A. conventions. A varied and interesting program was also provided, including vital information on the recent developments on the extent of the conservation program and on percentage depletion. Included were two panel programs—one on operating problems and the other on promotion.

President's Address In his welcoming address President K. K. Kinsey (Concrete Materials & Construction Co., Cedar Rapids, Iowa) traced the growth of the association from just over 100 members a few years ago, and 245 a year ago, to the present record of 323 active members. The association, he said, has also grown up in other ways and has firmly established aims and knows where it is going. There is no reason for anything but optimism for the future, said Mr. Kinsey, who expects continued growth of the industry and of the association.

Coming Conventions No dates have been set for future conventions but those in 1955 and 1957 will definitely be held at the Statler Hotel, Washington, D.C. No decision has been made on the 1956 convention but it may again be held in Chicago in order to give members the opportunity to see the N.C.S.A. and N.S.G.A. machinery exhibits. The record attendance at Chicago was said to be partly due to attendance of many middle-western producers who will not go as far as Washington. The 1954 summer directors' meeting will be held in Cincinnati in June.

Manufacturers' Division One of the significant developments of this convention was the establishment of a Manufacturers' Division of N.A.L.I. Retiring President K. K. Kinsey, newly-elected President John M. Deely and Executive Secretary Robert M. Koch met with a number of manufacturers, both members and non-members of N.A.L.I., and discussed the formulation of such a division. The board of directors had approved changes in the bylaws which allowed the establishment of this division.

E. C. Farrar (American Cynamid Company) was elected acting chairman of the Manufacturers' Division. W. H. Van Buren (Quaker Rubber Corporation) was elected acting secretary. A membership committee was named consisting of Harry Wendler (Highway Equipment Company) as chairman, E. C. Farrar, and W. H. Van Buren. A bylaws committee of R. C. Johnson (Simplicity Engineering Co.), Jules Jenkins (Vibration Measurement Engineers), and A. M. Lowrey (Quaker Rubber Corporation) were named to draw up the bylaws for the division.

Executive Secretary's Report In his annual report Robert M. Koch, executive secretary of N.A.L.I. said that in spite of all efforts the farmer still will not use agstone as he should

Annual N.A.L.I. banquet, which was held on February 20.

when he has to pay the entire cost. From 1914 to 1936, he said, the Agricultural Extension Service did a good job of selling but agstone sales never got above the 3 million ton mark. Under the Benson administration, said Mr. Koch, only $8,000,000 was to be spent for agstone in 1954 but this was finally raised to $40,000,000. President Eisenhower, he said, feels that the A.C.P. is the keystone of any farm program. A total of $195,000,000 is now being asked for conservation practices in 1955 and this is likely to be the minimum for coming years with possibilities for as high as $300,000,000 not out of the question. The association aims to continue working for a larger percentage of the funds for agstone. In 1954, said Mr. Koch, agstone producers should sell from 50 to 100 percent more than they did in 1953; in 1955 and succeeding years further gains are expected.

Mr. Koch also commented on the skepticism with which the association's first farmer opinion surveys were received in official circles. As more surveys were made, however, they began to carry more weight, partly because states were selected whose congressmen had voted against the Agricultural Program. Many of these congressmen, he said, are now supporters of the program. Mr. Koch then mentioned the general survey of farmers throughout the nation. In this 500,000 post cards were sent out. Partly as a result of such surveys a completely bi-partisan support is being achieved in Congress and there is growing public support.

Mr. Koch emphasized that state-level activities are becoming more important. State decisions greatly affect producers, and many states have impediments of A.C.P. and agstone payments. Group action of producers, state colleges, etc., he said, could change this. Every producer should watch carefully for any proposed specifications or other requirements before the state program is announced.

Mr. Koch is much opposed to mandatory pH tests of the soil and feels that there is great danger in the growing acceptance of this test as the sole yardstick of soil needs. He mentioned an article by Dr. William A. Albrecht, chairman of the Department of Soils of the University of Missouri being published in the March issue of PIT AND QUARRY which introduces this theme. This article, he said, opens up a complete new horizon on the use of agstone.

New N.A.L.I. officers shown here are (left to right) John H. Riddle, Riddle Quarries, Inc., Salina, Kans. (vice-president); John M. Deely, Lee Lime Corp., Lee, Mass. (president); and Alvin R. Armbrust, Fayette Limestone Co., Inc., Washington C.H., Ohio (treasurer).

Officers and Directors The following officers were elected for a term of one year: president—John M. Deely (Lee Lime Corp., Lee, Mass.); vice-president—John H. Riddle (Riddle Quarries, Inc., Salina, Kans.); executive secretary—Robert M. Koch, Washington, D. C.; and treasurer (re-elected)—Alvin R. Armbrust (Fayette Limestone Co., Inc., Washington Court House, Ohio).

Regional vice-presidents re-elected were: Leonard S. Fry (Pennsylvania, Region I; Philip E. Heim (Ohio), Region II; Sam Davis Bell (Tennessee), Region III; and J. Larry Fay (Illinois), Region IV. L. R. Falk (Iowa) was named the new vice-president for Region V, succeeding J. J. Stark.

In selecting the new directors, the N.A.L.I. members again gave excellent representation to nearly all agstone-producing sections of the United States. The following directors were elected for a term of three years except as noted:

Region I—Thomas B. Stafford (1 year), replacing Harry E. Battin Jr.,

J. M. Huffman, M. J. Grove Lime Co., Stephens City, Va.; David Petrie, M. J. Grove Lime Co., Stephens City, Va.; and R. A. Adams, Pennsylvania Crusher Co., Philadelphia, Pa.

Elmer E. Shields, Farmers Limestone Co., Old Appleton, Mo.; Mark Hamill, Hamill Limestone Co., Monticello, Mo.; and W. D. Dillon, Dillon Stone Co., Columbus Junction, Iowa.

who resigned; R. T. Willingham (2 years), replacing the late Knott C. Rankin; John M. Deely; William E. Horne; W. H. Litteer; Charles Rich; and F. Grove White.

Region II—A. F. Duncan, Paul Frank, Arnold Mulzer, Robert D. McCrea, J. E. Ott, and Earl P. Holwadel.

Region III—M. M. Green, Burt F. Taylor, J. J. Griesemer, and A. E. Richardson.

Region IV—A. E. Markgraf, Ervin Ellefson, and Dallas Pickett.

Region V—Floyd Millen and Wood Weaver.

Report on Promotion William E. Stone (Piqua Stone Products Division, Piqua, O.) chairman of the committee on promotion, said that, while progress is being made on the use of promotional aids by member producers, the aims of most of them are too haphazard and scattered. He told what the association is doing to help its members and what it is planning to do but said that producers must also help themselves. The use of promotional literature provided by the association has increased but not nearly enough. Mr. Stone asked that all members send in samples of what they are doing in the way of promotion so that a promotional campaign can be organized on the national level. He urged that producers individually do everything they can, including getting on the local radio and club programs, to push agstone and conservation. (As a sidelight, Mr. Stone and John M. Deely of the Lee Lime Corp., Lee, Mass., were guests on the WLS "Dinner Bell" program that noon.)

Panel on Promotion As in former years, one of the features of the 1954 meeting of N.A.L.I. was an entire session on sales promotion. Russell W. Hunt (Southwest Lime Co., Neosho, Mo.) presided, and the following individuals served as panel members: Charles Coburn (Waukesha Lime & Stone Co., Waukesha, Wis.); William D. Dillon (Dillon Stone Co., Columbus Junction, Iowa); and Lynn Stewart (Meshberger Stone Co., Columbus, Ind.).

After a brief discussion of various advertising media employed by his company, Mr. Coburn expressed the firm conviction that agricultural limestone can be sold through careful advertising and by means of frequent personal contacts with customers and prospects. This speaker referred to the fine results obtained from the use of the Iowa association's road posters. He stated that his company's entire advertising program has cost only a few cents per ton of material marketed, and that this modest investment has been recovered many times over.

Mr. Stewart discussed his company's practice of selling complete soil conservation service, including drainage, terracing and fertilizing in addition to liming. The firm has equipment for handling these varied services. One truck is kept in reserve just for fertilizer spreading operations for the reason that contract lime haulers do not care for this type of work.

Some other facets of the Meshberger promotional program: furnishing lime for testing plots in the surrounding counties; county fair exhibits at which color photos of customers' farms are prominently displayed; and the presentation of movies at local farm bureau meetings.

Mr. Dillon covered some of the highlights of his company's unusual varied program of sales promotion, including sponsoring 4-H Club calendars, placing advertisments on the covers of local phone directories, and providing radio interviews for 4-H winners at fairs in surrounding counties. He also made reference to extensive direct-mail activities, and to the use of movie trailers in nearby theaters.

J. C. Gentle, Dolcito Quarry Co., Birmingham, Ala.; and A. M. Hamilton, J. M. Hamilton & Sons, Marion, Ohio.

Mr. Hunt described briefly a program of farm financing in his area to provide badly needed funds for conservation work. Study of many farms had indicated a need for the expenditure of $30 to $40 per acre to get fields into such shape that they were worth working with. To facilitate the work the local chamber of commerce employed a special farm agent to determine needs, and local banks then undertook the necessary financing.

This speaker also made brief reference to his company's practice of mixing fertilizer with agricultural limestone. In this connection he expressed the forthright view that farmers will "go" for any scheme that will help keep them out of their fields.

In the open discussion following the formal panel presentation various

Professor C. J. Chapman, extension specialist in soils, University of Wisconsin, who spoke on the importance of the use of aglime in soil conservation.

Robert M. Koch, N.A.L.I. executive-secretary, and Samuel Omasta, assistant executive-secretary, "relaxing" at the convention.

A PENNY can still buy you something important—

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T. W. Stumm, Consumers Company, Chicago, Ill.; and Mark F. Withey, Trojan Powder Co., Arlington Heights, Ill.

producers commented on the need for more aggressive promotion work to compensate for the reduction in A.C.P. payments. Jack Deely, newly elected president of the association, expressed the view that the entire agricultural limestone industry has had an unfortunate tendency to hold its product too cheap. He stated that his company, Lee Lime Corp., Lee, Mass., spends the minimum of 50 cents per ton to promote and sell agricultural limestone.

Mr. Deely pointed out that present annual sales of approximately 28,000,000 tons of agstone, compared with the 90,000,000 tons which is needed to restore our farmlands, is in itself a clear indication that the industry is not doing an effective merchandising job. In his view one of the remedies is to do a better all-around service job, and to pay truckers and spreaders adequately so that they will have an incentive to help promote and sell the material with which they work.

Percentage Depletion A report on recent developments on percentage depletion was presented by Horace C. Krause (Columbia Quarry Co., St. Louis, Mo.), chairman of the percentage depletion committee. He told how the committee, the association counsel and the staff all keep in close touch with developments and keep the members advised.

During the time of the meeting, a totally unexpected development relating to percentage depletion occurred—namely the issuing of Release No. 24 by the House Ways and Means Committee. Mr. Krause read the entire release at the meeting, although time did not permit a thorough study and interpretation to be made.

According to the Ways & Means Committee release, the end-use test for limestone would still apply, although the 10 percent depletion category for dolomite, magesium carbonate, and calcium carbonate written into the 1951 Revenue Act would be eliminated. Thus limestone used for ordinary purposes would continue to be depletable at 5 percent and that used for chemical and metallurgical purposes at 15 percent. Agricultural limestone would presumably fall into the 15 percent chemical category.

Certain changes were also made in the new committee ruling with regard to what constitutes ordinary treatment processes allowable under

W. C. Laue, Du Pont Co., Des Moines, Ia.; and Clint A. Allen, executive-secretary, Iowa Agricultural Limestone Producers Assoc., Des Moines.

mining. Thus in the case of brick and tile clay, crushing, granulating, disintegrating, rolling, tempering, and removing air are considered ordinary treatment processes, but molding, shaping, firing, or burning are not. In the case of magesite, burning is an ordinary treatment process and in the case of talc, fine pulverizing is to be treated as such a process. However, it was not known how these revisions would affect agricultural limestone processing.

The committee ruling would also allow the reporting of combined properties. Other details of the new Ways and Means Committee ruling were reported in the March, 1954, issue of PIT AND QUARRY, page 79.

Mr. Krause also read a letter from John T. Sapienza, association counsel, which summarized the latest legal developments relating to percentage depletion. The letter told of two brick and tile manufacturers being the first to test the revenue regulations.

The letter also pointed out that there are two alternative courses of action open to the taxpayer if in the event the I.R.S. examining agent should disallow part or all of the depletion deduction claimed and the taxpayer does not wish to accept the proposal of the examining agent. They are (1) the taxpayer can file a protest, take the case to conference in the Revenue Agent's office and later to the Appellate Division and still later to higher courts if necessary. (2) The taxpayer can pay the proposed deficiency at any time during his controversy with the Revenue Service, which will stop the running of interest. The taxpayer has two years from the date of payment of the deficiency or three years from the date of the return, whichever is later, within which to file a claim for refund.

Report on Legislation John M. Deely (Lee Lime Corp., Lee, Mass.), chairman of the legislative committee, told of the activities of this group, especially its contacts with members of Congress.

Scene at the N.A.L.I. luncheon—(left to right): L. Dushek, Callanan Road Improvement Co., S. Bethelhem, N. Y.; Mrs. C. J. Chapman, wife of Professor C. J. Chapman, Madison, Wis.; Mr. and Mrs. Edmund Clark, Munnsville Limestone Corp., Munnsville, N. Y.; W. B. Lenhart, Rock Products Magazine, Chicago; Roland Mulzer, Edgar Mulzer, Arnold Mulzer, and Marvin Stoffe, all of Mulzer Brothers, Tell City, Ind.

Even congressmen living in cities, who have no direct knowledge of or interest in agriculture or conservation, were contacted as their votes also count and their constituents are affected by any developments. The educational side of this work, said Mr. Deely, is increasing and will be given even more attention in the future. He mentioned the importance of the N.A.L.I. farm opinion surveys in furthering these aims.

Aglime and Soil Conservation *The Importance of Lime in a Longtime Program of Soil Conservation and Fertility Maintenance* was discussed by Professor C. J. Chapman, extension specialist in soils at the University of Wisconsin, and one of the nation's outstanding soil scientists. He began by pointing out that "our soil is our country; to save the one is to save the other." He strongly advocated the continuing of rebuilding millions of acres of exhausted soils to a high state of production through use of a balanced program of fertilizers.

In discussing the role of various fertilizers, he pointed out that the use of agricultural limestone is the basic foundation of all soil building practices. He stated that farmers should apply lime to their acid soils, both cropland and pasture. Enough lime should be used to raise the pH to at least 6.5 (slightly acid) and then replenish the supply every six to eight years with additional applications in order to maintain the proper acidity level. Keeping most of our soils a little on the acid side is advisable since it favors the release of certain trace elements such as manganese and boron.

The speaker then enumerated other values contributed by aglime, such as supplying an abundance of calcium and in the case of dolomitic limestone, magnesium; promoting the decay of vegetable matter in the soil, thus aiding in the formation of humus; and favoring the growth of most legumes such as alfalfa and clover by neutralizing soil acids. These legumes not only furnish protein feed at low cost to livestock but "fix" much of their own nitrogen through the action of bacteria within the nodules on the roots of these legumes. In addition, lime (especially dolomite which supplies both calcium and magnesium) helps to keep phosphate fertilizers in more available forms and will even liberate or "loosen up" phosphates in an acid soil. Also, by favoring bacterial processes, lime speeds up the decomposition of organic matter to release not only nitrogen but other plant foods contained in it.

The speaker then pointed out that more than 25 million tons of this soil sweetening material have been applied to the acid soils of the state. But still the job hasn't been completed; there are hundreds of thousands of acres of land that need more lime and the job will never be complete because the need is never ending. Nevertheless, the nearly two million acres of alfalfa harvested in Wisconsin the past three years is the pay-off on the state's 35 years of "Lime for Alfalfa" campaigns.

Professor Chapman emphasized that although liming serves a major function in soil rebuilding, a balanced conservation program is essential for maximum benefits. Thus such items as manure, phosphate and potash, trace elements, growing of legumes, crop rotation, development of organic matter, and erosion control are integral parts of a conservation program. The speaker illustrated his talk with a movie.

Panel on Operations The Saturday morning session featured the Panel on Operations, over which Leo L. Davis, Highland Stone Division, New York Coal Sales Co., Chillicothe, Ohio presided. Participants included C. E. Hogeboom (Consumers Co., Chicago); Rollie Schneckloth (High Test Lime Quarry, McCausland, Iowa); and W. R. Hackney (L. S. Hackney Estate Construction Co., Holcomb, Ill.) although there was widespread audience participation. The panel considered problems involved with the various stages in the production of agricultural limestone—from the stripping of overburden through the fine pulverization and screening of the finished product.

On the subject of stripping, one producer stated that his company strips 1 to 1½ years in advance of quarrying. The panel discussed in detail the subject of drilling, referring to the use of wagon, well, and rotary drills. One eastern producer working a 320-ft. face used the well drill exclusively because of the great height of the face. Several producers reported on the use of rotary drills, pointing out that drilling rates considerably exceeded those of other types of drills. Rates up to 40 f.p.h. in limestone were reported. One Illinois producer reported a coming test of a new truck-mounted middleweight rotary drill at his quarry.

Heated screens were mentioned as a good means of producing high quality fine-grade agstone; one producer reported making a successful 20-mesh separation through the use of heated screens.

Dust and moisture problems were also discussed. A Middlewestern producer reported on the use of the Johnson-March system for reducing the dust problem. Under the system the stone particles are sprayed during the process with a mixture of water and a special wetting agent.

The problem of wind loss from open storage agstone stockpiles was also discussed. One producer reported constructing a low-cost storage shed to protect the stockpile. Another producer stockpiled the material against the quarry face, which afforded much protection from wind loss.

Lastly the panel discussed the use of airslides and pumps for conveying agstone via pipeline.

Two excellent movies were shown at the Saturday morning session, including a March of Time film on "Grasslands Farming" and a film recently produced by Gardner-Denver dealing with the underground mining operation of the Black White Limestone Co., Quincy, Ill. The former film, which was narrated by R. Willis Stout, soils editor of the *Kentucky Farmer* and speaker at last year's N.A.L.I. convention, outlined the necessary steps in developing a good pasture; the role of agricultural limestone was considered basic. The latter film illustrated the complete operation of a limestone mine as well as the numerous uses of limestone.

National Safety Council Issues Quarry Safety Bulletin

A new National Safety Council booklet, *Safety in Quarry Operations,* provides quarries and related industries with the basic information needed to build and maintain an effective safety program.

The booklet is a complete revision of an earlier one, and covers organizational topics such as safety committees, accident investigation and records, and medical and first aid facilities. Specific physical problems are discussed, such as scaling the face, ingress and egress from pits, drilling, etc. Extensive sections are included on explosives, railway and truck transportation, and related topics.

Council data sheets—particularly those relating to the prevention of accidents from falling rock and the operation of heavy-duty trucks—have been drawn upon for safe practices.

This volume is available to council members at $1.25 per copy and to nonmembers at $2.50. Quantity prices may be obtained by writing the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Clinker-Grinding in Ball Mills

By R. E. LUEBKE
Processing Machinery Dept.
Allis-Chalmers Mfg. Co.

another P-Q exclusive

THE great majority of cement plants now operating the United States have been built since the early years of the twentieth century. Many have been expanded and moderized since their initial erection, but some still operate with little change, as they have for 30 years or more.

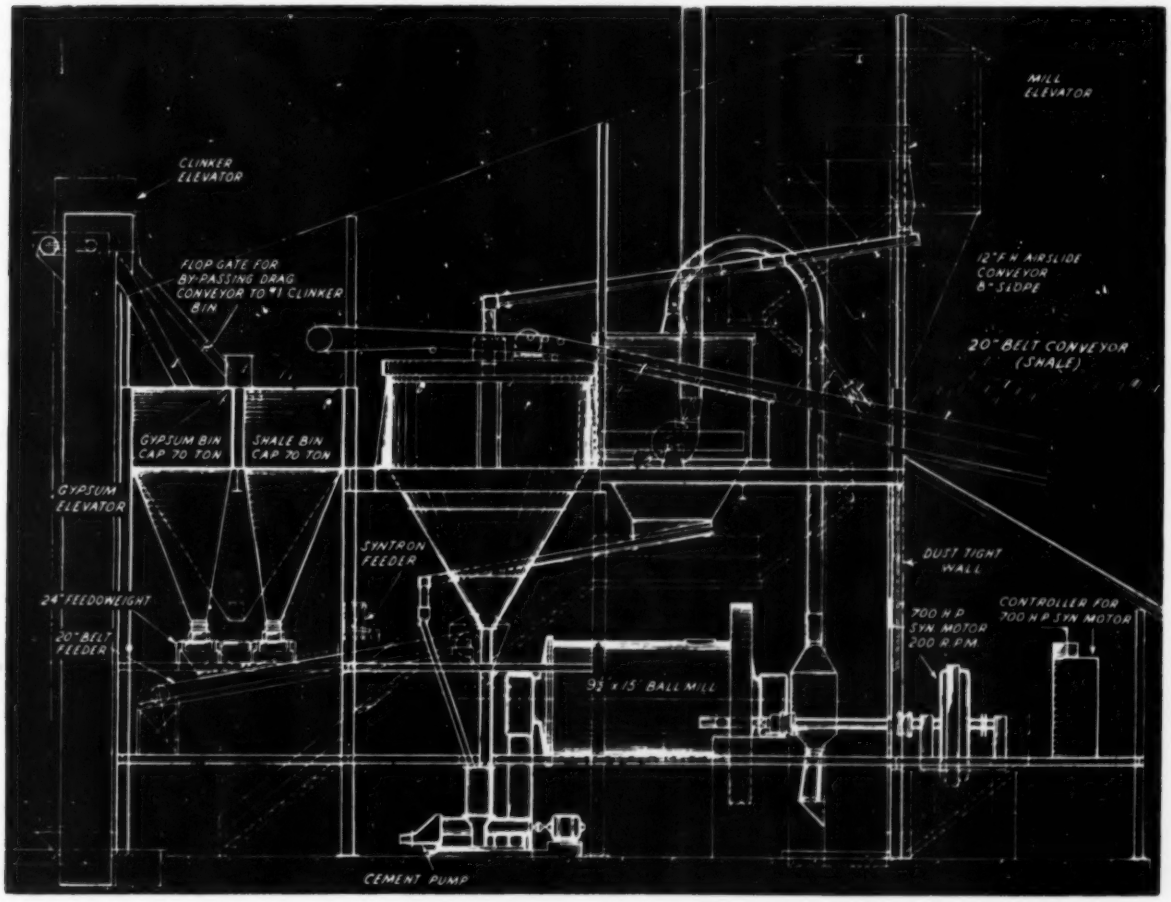
In general, clinker grinding has been accomplished in these plants by either multi-stage grinding (in a number of separate mills) or in compartment mills. In most cases these mills were initially operated in open circuit, but as demands for higher quality cement and better product control were made upon the cement industry, the circuits were generally altered to closed-circuit operation with air classifiers.

Fundamentally, the grinding circuits were relatively simple, even though they frequently consisted of small, multiple units. This was principally due to the fact that most plants had relatively modest beginnings, and they expanded by the simple expedient of adding duplicate machines. Another force restricting the size of grinding units was the limited availability of power, and especially limitations to high, momentary line surges. This necessitated the use of small motors for grinding, and consequently limited the size of the mills.

During the 10-year period from 1930 to 1940 expansion of the cement industry in the United States was virtually at a standstill. A few existing plants were increased in size because of favorable local conditions, but in general, emphasis was placed on increasing economy and efficiency of existing plants, many of which were operating at reduced capacity.

Innovations introduced during this period by machinery manufacturers did tend to increase the efficiency of grinding circuits, especially with regard to the clinker grinding departments. These included stage grinding in two or three separate mills, with classification between units, as well as multi-compartment, multi-diameter, and conical mills, with various types of discharge arrangements for intermediate classification. Although efficiency of operation was increased, the circuits were gradually complicated, requiring additional labor and close attention in order to maintain balance between the various stages.

In the subsequent post-war years of greatly expanding markets and rising labor and material costs, the emphasis in plant operations began to be placed on simplicity of operation as well as greater efficiency in

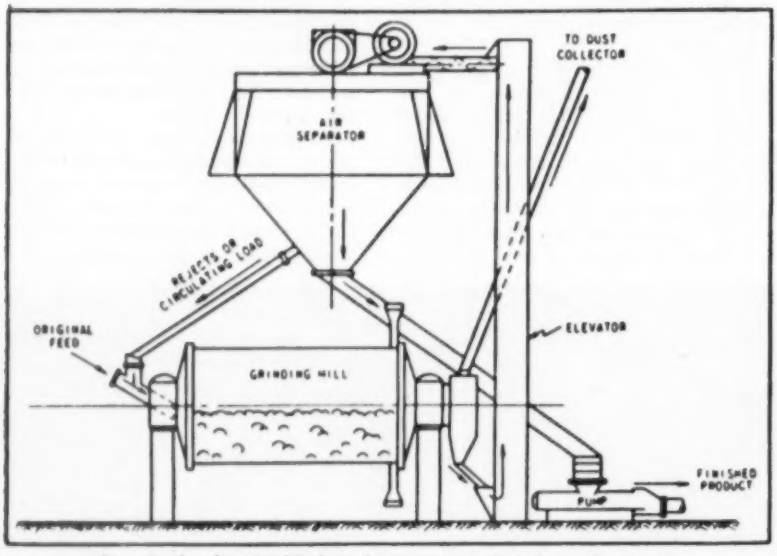

MILL ELEVATOR
CLINKER ELEVATOR
FLOP GATE FOR BY-PASSING DRAG CONVEYOR TO #1 CLINKER BIN
12" F H AIRSLIDE CONVEYOR 8° SLOPE
20" BELT CONVEYOR (SHALE)
GYPSUM BIN CAP 70 TON
SHALE BIN CAP 70 TON
GYPSUM ELEVATOR
SYNTRON FEEDER
DUST TIGHT WALL
24" FEEDOMEIGHT
20" BELT FEEDER
700 H.P. SYN. MOTOR 200 R.P.M.
CONTROLLER FOR 700 H.P. SYN MOTOR
9½ x 15' BALL MILL
CEMENT PUMP

An elevation view of the new finish-grinding department of the Superior (Ohio) plant of the Marquette Cement Manufacturing Company; each of the two 9½- by 15-ft. mills is operated in closed circuit with an air separator.

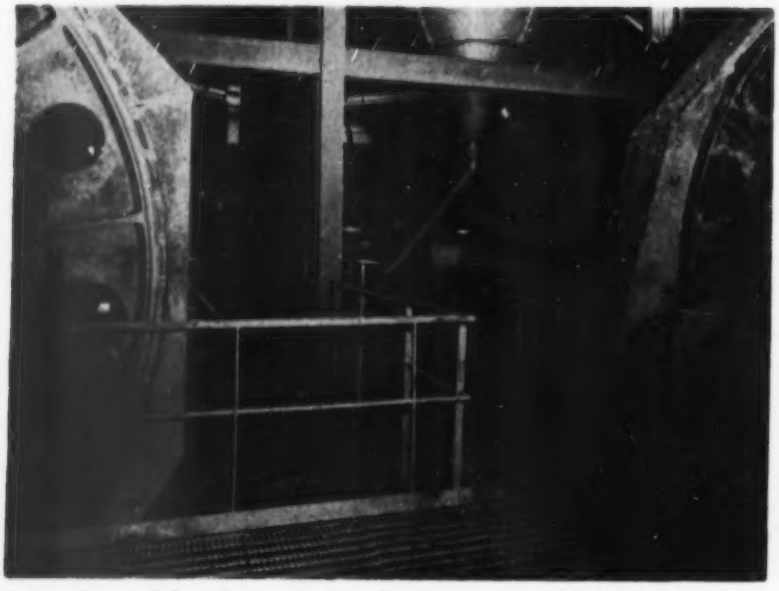
order to provide savings in labor and maintenance. This trend ultimately led to the type of clinker grinding operation which will be discussed in this article, namely single-stage, closed-circuit grinding.

It is not the purpose of this discussion to go into details of theory concerned with grinding, but rather to review the development of short ball mill operation for clinker grinding.

It is a generally accepted theory of long standing that a compartment mill product will have a certain amount of over-ground material, which it is desirable to have in normal cement, and especially in high-early-strength cement. It was thought that if the finished material were withdrawn from a grinding mill too quickly by the classifier, these important fine particles would be lost to the finished product. However, experiments with simplified grinding circuits have definitely shown that a short mill operating in closed circuit with an air separator and with a high circulating load can produce cement equal to that turned out in a compartment mill. These experiments have been conducted by established commercial plants under normal operating conditions, with little physical variation in the products from these mills. Neither was the strength of cement samples from either mill noticeably different.



An example of a simplified single-compartment grinding mill circuit.



A general view of the mill arrangement at the Superior plant. Note the direct discharge of the air separator reject spout to the mill feed spout, and the arrangement for discharging finished separator product to the cement pump on the floor below.

The successful operation of a single-compartment clinker grinding mill will approximately follow this pattern: mill feed (usually 1 in. and under) passes through the mill rather quickly for the initial stages of reduction. Ball size graduation in the mill is generally from 3½- to 4-in. maximum size down to 1-in. minimum.

Mill discharge is immediately elevated and classified according to finished product requirements. The separator (or classifier) product is conveyed away and the oversize (or rejects) returned to the feed end of the mill for further grinding.

Classification under these circumstances results in a large amount of the material being returned to the mill for additional work. Since a considerable amount of fines is circulated with this large circulating load, the ultimate mill product contains a great variation in particle size. When the mill is operating in a balanced condition with a relatively uniform circulating load, the classifier product almost always contains good particle size distribution comparable with a compartment mill product.

The combination of high circulating load and the normal return of some finished material from the air separator to the mill produces this desirable effect.

Calculations in the laboratory and the actual field tests show that grinding of finished cement in short, single-compartment mills can be accomplished with a saving in mill horsepower per unit of product of from 5 to 15 percent. However, from this must be subtracted the increased cost of handling the high circulating load in the complete mill circuit resulting from larger elevators and conveyors.

In any event, it seems to have been proven rather conclusively that finished cement can be produced in relatively simple grinding circuits at good efficiencies when compared with other methods; and there is the additional advantage of considerable savings in operating personnel and equipment maintenance and repair. It was on the basis of this conclusion that officials of the Superior Cement Division of the New York Coal Company decided to install a circuit of this type in their plant at Superior, Ohio, in 1951. (This is now the Superior, Ohio, plant of the Marquette Cement Manufacturing Company.)

A brief description of this installation follows, together with the results of operations since the new

grinding mills went into operation in the fall of 1952.

In June, 1951, two Allis-Chalmers 9½-ft. diameter by 15-ft. long ball mills were purchased for the Superior plant. These mills were selected to replace existing clinker-grinding equipment at this plant which consisted of the following:

Unit	Total Horsepower
1—roller-type preliminary	300 h.p.
1—5- by 22-ft. tube mill	225 h.p.
3—5½- by 20-ft. tube mills	670 h.p.
1—5½- by 20-ft. tube mill	300 h.p.
Total connected h.p.	1,500 h.p.

Assuming that the roller mill operated only 50 percent of the time, the maximum production of 148 bbl. per hour required approximately 9.1 h.p.-hours per bbl. with the above grinding arrangement. The finish-grinding mills were operated in closed circuit with Sturtevant 16-ft. dia. air separators.

One of the limiting features of the new grinding department was the space restriction which called for the installation to be placed within an existing structure. An area 60 ft. long by 38 ft. wide by 38 ft. high was available; and although it was anticipated that the installation could be made within this area, the final layout provided for an extension to the length to provide for the mill drive motors and control. Also, it was necessary to raise the roof of the existing building to accommodate elevator head shaft and drive assemblies and the feed bins.

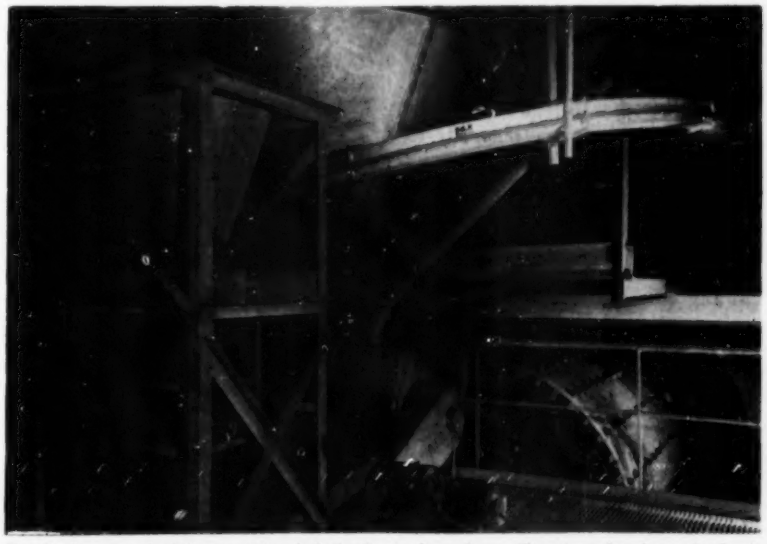
The final layout of equipment is shown on page 135; and although the arrangement of machinery is different from that originally considered, the resultant installation proved to be far more functional.

The initial plant called for the use of screw conveyors, with a provision for operating the mills either in parallel or series. It was thought that this might be necessary for special products such as mortar or high-early-strength cements. As shown, screw conveyors were replaced by a system of Fuller-Huron Airslides, and the optional series arrangement was eliminated, although space was provided for its future installation. During the process of engineering this project, it was felt that there could be no reasonable doubt that an adequate product could be produced with the mills operating independently and in parallel.

Erection of the 9½- by 15-ft. ball mills continued during August and September, 1952, and initial oper-

(Continued on page 148)

A view of the mill feed platform above the operating floor. Three weighing feeders serve each mill, handling clinker, gypsum, and a special local shale; they discharge to a common inclined conveyor which in turn leads to the mill feed spout. For production of standard or air-entraining cement, two of the weighing feeders are used normally; the third feeder is used for mortar cement production.



The discharge end of the receiving belt feeder is shown here. This view also shows the feeding arrangement for the resinous compound required for air-entraining cement.

The 9½- by 15-ft. mill for finish grinding. Note the simple feed spout arrangement.

WASHINGTON NEWS LETTER

REGARDLESS of what happens to business, it is regarded as certain in Washington that taxes are coming down. If business falls off more than is now expected, taxes will probably come down more than is now being planned.

The question now before Congress is not whether taxes should come down, but rather, whose taxes shall come down. Under the current tax laws, approximately 44,000,000 people in the United States would be required to pay income taxes. About three-fourths of them earn less than $5,000 a year, and about one-fourth earn more than that amount annually. The table below shows how the various tax reductions affect these two groups of people.

The rate cut which went into effect at the beginning of the year was favored by the Administration, which has also recommended the dividend credit tax relief for stockholders. And if income taxes are to be cut, the Administration has made it clear that it would prefer a rate reduction over an increase in the individual exemptions.

As may be seen from the table, these are the politically dangerous tax cuts, because a larger proportion of the savings go to the minority of the taxpayers—approximately one-fourth—who earn $5,000 a year or more. In an election year, when every vote counts equally, it is generally regarded as smarter politically to give your tax advantages to the more numerous low-income group, rather than to the less numerous high-income people.

That is why many members of Congress, including many Republicans, are anxious to reduce excise taxes. This is the kind of tax reduction which can be felt quickly by a large number of people. Furthermore, the merchants through their extensive advertising are sure to do a "bang-up" job of publicizing the move.

This is also why the Democrats, led by conservative Senator George of Georgia, are backing the increase in individual exemptions. Particularly now that most people are on a pay-as-you-go tax basis, the effect of an increase in exemptions will be felt immediately in terms of smaller income tax withholdings. It will look and feel just like a wage increase. Politically it is probably the smart thing to be in favor of such a move in an election year. It also puts the Democrats in the position of being able to claim that they are the party of the low-income people while the Republicans are, as they have claimed, the party of the higher-income classes.

In view of the political implications of the tax fight and the effect which it is likely to have on the November elections, where the narrow Republican majority in each of the houses of Congress is clearly in jeopardy, it is being freely predicted in Washington that the outcome will be a compromise. There will be tax cuts for everybody. It now looks very likely that the lower-income taxpayer will get his $100 exemption increase, while the higher-income taxpayer will get his tax rate cut.

It is the plan to balance the federal budget that will suffer; but that has become a forlorn hope anyway. Not tax cuts but the rapidly deteriorating business profit situation gave the balanced budget its coup-de-grace.

It is perfectly obvious that with a progressive tax system—that is, one in which the tax rate increases as the income rises—a particular cut in profits or income, say 10 percent, must result in a far more substantial reduction in the tax take, perhaps as much as 20 percent. It is likely that the recent business decline, because of its effect on profits and income, will result in a far greater tax loss than the recent tax rate cut. If a further cut in tax rates could reverse the trend and get business back on the track of increased sales, profits, and employment, it might very possibly turn out that the government's total tax receipt would not fall at all.

This is what the Eisenhower Administration is relying on as its first line of defense against a deeper recession. It has proposed several tax changes designed to encourage business to spend, particularly on capital improvements. The most important of these is the recommendation to permit more rapid depreciation of plants and equipment.

A good part of the Administration's justification for favoring tax reductions which appear to benefit the high-income groups is that it is thereby freeing funds for risk capital which would not otherwise be forthcoming.

Furthermore, if the business decline is not soon halted, the Administration appears to be prepared to recommend further cuts in corporation income taxes and finally to accept bigger personal exemptions.

If tax cuts do not do the trick, then there are certain additional measures which the Administration can take, and appears to be prepared to take, without the necessity of going to Congress for authorization or appropriations. For example, it can speed up government expenditures for both civilian uses, such as for roads, waterways, etc., and for military uses. The military program which was slowed down last year can be speeded up this year. In great part, the funds have already been appropriated.

Also, without further approval from Congress, additional steps can be taken to make money more plentiful and bring interest rates down. The hard-money, high-interest-rate policy of last year has already been reversed partially by the operations of the Federal Reserve Board. It can go much further in this direction. In addition, the government itself has been in the lending business before, and it can get back into this business through several agencies (such as the Small Business Administration) which have not been disbanded.

In the field of housing, the Ad-

(Continued on page 146)

Type of Tax Reduction	Estimated Amount of Taxes Saved	Estimated Proportion of Saving to Low Income Taxpayers—Less than $5,000	Estimated Proportion of Saving to High Income Taxpayers—$5,000 Plus
Rate cut which went into effect Jan. 1, 1954	$3,000,000,000	30%	70%
Suggested 5% rate cut	$1,400,000,000	30%	70%
Proposed dividend credit tax relief for stockholders	$750,000,000	10%	90%
Proposed excise tax reductions	$1,000,000,000	50%	50%
Suggested increase from $600 to $700 exemption	$2,300,000,000	66%	34%

Ninth Annual Convention of Iowa Agricultural Limestone Association

THE 9th Annual Convention of the Iowa Agricultural Limestone Association, Inc., was held in Des Moines, Iowa, at the Savery Hotel on March 3 and 4, 1954, with a record attendance. On March 3 the board of directors held its annual preconvention luncheon and meeting with the members of resolutions, auditing, and nominating committees. During the afternoon all committees held their respective meetings and formulated their reports, which were given during the business session on Thursday morning.

On Wednesday evening, March 3, a reception was sponsored by the associate members of the association, who each year act as the entertainment hosts of the convention.

The Thursday morning general business session was formally opened by President Ernie H. Matthias, who welcomed the limestone producers, the associate member representatives, and guests to the convention. After the reports by the committees had been made, Clint A. Allen, executive secretary-treasurer, presented his annual report.

Among recommendations of the resolutions committee was one pertaining to the bottleneck in soil testing work in Iowa. This program aims to show the need for agricultural lime in connection with the Agricultural Conservation Program as regulated by the United States Department of Agriculture. This resolution, because of some opposition from the floor was finally withdrawn and referred to the association's board of directors for their final approval and proper handling.

Robert M. Koch, executive secretary of the National Agricultural Limestone Institute, gave a report on the third annual convention of that body which was held in Chicago on February 19 and 20. He also reported briefly on legislation pertaining to the 1955 A.C.P. appropriation and also new developments regarding percentage depletion. While attending the Iowa convention Mr. Koch received a message from Washington saying that the committee in Congress handling this matter had indicated agricultural limestone as used for farm purposes would now be entitled to receive 15 percent percentage depletion. However, all other limestone, unless used for chemical or metallurgical purposes, would be eligible to receive only 5 percent. He also cited a test case being put through the courts in the East in an endeavor to establish that all agricultural limestone receive a straight 15 percent in figuring percentage depletion, regardless of end use.

The convention was then addressed by Dewey Cornell, program director for the A.S.C. Committee of Iowa, on the subject of *Stabilization of Agriculture through Conservation.* Mr. Cornell stated that acreage allotments as proposed in the new regulations from Washington should prove to be a boon to progress in soil conservation. By converting farm acres into legume crops farmers can gain much as they allow the land that is being cropped too heavily to rest. The growth of legume crops will help tremendously in building good top soil for the future and at the same time check erosion in many parts of the state.

Distinguished guests present at the noon luncheon included Governor William S. Beardsley; Lieut. Governor Leo Elthon; Clyde Spry, secretary of agriculture of the state of Iowa; and Dr. Louis M. Thompson, who is in charge of farm operations at Iowa State College.

Governor Beardsley addressed the gathering briefly and lauded the limestone producers of Iowa for their progress over the last few years. He commended the growth of their association's membership and the fine work they were doing in promoting the use of agricultural lime in Iowa, which is so sorely needed. He said the Iowa association was to be congratulated on its promotional advertising, which alerts the farmer and the general public to the vital need for using agricultural lime as a soil-building practice.

Dr. Louis Thompson of Iowa State College, in introducing the association's Scholarship Award Student, Cecil W. Byerly, stated that the latter had received only an eighth-grade education and then because of necessity had returned to farming. Mr. Byerly was then called to serve in the armed forces, and upon his return he went back to the farm. One day some one connected with the S.C.S. encouraged him to go to Iowa State College and take an entrance examination to see if he could enter the college to study agronomy. He not only was accepted but now is graduating with the second-highest standing in his class.

Melvin E. Raid, vice-president of the association, presided at the afternoon meeting. Alvin F. Bull, field editor of *Wallace's Farmer* and the *Iowa Homestead,* was the first speaker. His subject: *Don't Apologize, Sell It,* let his audience know that it was high time limestone producers started pushing their product by doing some actual selling. The need for this commodity is vital not only to Iowa, he declared, but to the entire country, if we are to keep our farm land in top productivity. Most farmers will try everything under the sun, unless some one convinces them that they should use agricultural lime as the first measure of good soil conservation and top soil building.

Dr. Marcus Bach from the School of Religion of the State University of Iowa, Iowa City, was the next speaker. His address on *The Will To Believe* proved to be very thought provoking and without a doubt was one of the highlights of the convention. Dr. Bach has made a study of every known religion in the world, having traveled some 40,000 miles and visited in many foreign countries.

J. W. Reese, supervisor of weights and measures in the state of Iowa, spoke briefly on the new regulations pertaining to installation of quarry scales and the methods of state inspection being used.

After this session the board of directors convened to install the newly-elected directors and to elect the officers for the year 1954. It was announced that Melvin E. Raid had been chosen president and Wood W. Weaver vice-president.

The associate members then took over the convention for the remainder of the evening. At 6:00 p.m. a reception was held in the Grand Ballroom of the hotel. This event was followed by the annual buffet dinner, which was attended by 306 persons. Floral decorations in the Terrace Room, featured the association's welcome to the guests.

The York Stone and Supply Company, York, Pa., recently suffered a $25,000 loss from a fire which destroyed the interior of the 75-ft. high lime crushing plant. The fire, believed to have been caused by a dust explosion, broke out near the top of the elevator tower and worked downward.

Important Standardization and Research Work Discussed at A. S. T. M. Committee Week

THE American Society for Testing Materials held its annual Committee Week February 1 to 5, 1954, in Washington, D.C. The gathering was attended by a record-breaking total of 1,413 delegates, who met in 428 separate meetings —another record. Considerable new research work was discussed, and many new specifications and tests for materials and numerous revisions were completed. The size of the gathering indicates an increasing awareness on the part of men in American industry and in the government of the tremendous importance of standardization.

Most of the new and revised standards completed at the meeting are subject to letter ballot in the committees before they are referred to the parent society for action. In general, the new specifications will be considered finally at the A.S.T.M. annual meeting in Chicago during the week of June 13, although some may be approved prior to that meeting through the Administrative Committee on Standards.

The reports of the A.S.T.M. committees on cement, lime, concrete, concrete aggregates, and gypsum follow.

Committee C-1 On Cement

At the meeting of Committee C-1 on Cement held February 3 and 4, the report of the activities of the cement reference laboratory was especially significant since it marked the 25th anniversary of this important function and activity of the committee. The lastest report described the activities of the tenth and latest inspection tour of the laboratory. This tour covered a three-year period and included visits made to 261 laboratories, in which the various pieces of apparatus and equipment were checked and calibrated, running from balances and glassware to compression testing equipment.

A revised procedure is now being completed for determining sodium oxide and potassium oxide by means of the flame photometer method. A new method of test for heat of hydration of portland cement, which had been previously circulated to the committee, was accepted. This new tentative procedure represents a rapid method, based on the existing standard method C 186. A new series of co-operative tests will now be inaugurated to check the accuracy of the bleeding rate of portland cement mortar, using the mechanical mixer, and with calibrated flow tables. In the current co-operative work on fineness tests among five laboratories, excellent agreement was achieved in the density determinations by the Le Chatelier method.

Nine laboratories are participating in a co-operative series to establish the influence of machine mixing on mortar strength test results, which will also involve a comparison between the proposed flexural test procedure and the compressive test. Revisions of *Tentative Method of Test for Calcium Sulphate in Hydrated Portland Cement Mortar (C 265 T)*, previously circulated to the committee, together with editorial changes, were accepted for committee letter ballot. These revisions were designed to improve the accuracy and dependability of this method. Data are also being collected on the use of a polyethylene bag in curing the mortar.

A new tentative specification was accepted for portland-pozzolan cement. This specification covers two types of hydraulic cement, Type IP, in which the clinker conforms to the chemical requirements of Type I or Type II portland cement; and Type IP-A, which is an air-entraining portland-pozzolan cement. The new specification contains requirements for the pozzolan constituent. There was a discussion of the proposed tentative specification for slag cement, in the attempt to resolve criticisms of the earlier draft of this proposed specification. No recommendation will be made until the next meeting of the committee. Co-operative tests on the determination of air content in masonry cements was reported, in which three methods are being compared, namely, A.S.T.M. Method C 185 T, the proposed Federal Specification method, and that found in A.S.T.M. Specification C 91. Further study is progressing in respect to water retention apparatus.

In line with the current practice of highlighting the work of one working subcommittee at each meeting, an illustrated talk on the activities of the Working Committee on Sulphate Resistance was given by the chairman, William Lerch, Portland Cement Association.

The committee will next meet during the 1954 A.S.T.M. annual meeting in Chicago in June. Committee C-1 on Cement is headed by chairman R. R. Litehiser, Ohio State Highway and Research Laboratory, Columbus, Ohio; W. S. Weaver, Canada Cement Co., Ltd., Montreal, is the committee secretary.

Committee C-7 On Lime

The best means or procedure for determining the bond of lime mortars will receive attention in Committee C-7 on Lime, as reported at its meeting on February 5. The function of lime in respect to elasticity and flexibility of a mortar will also receive initial consideration by the subcommittee on research. Additional data will be collected through an accelerated program on soundness of lime mortar through the co-operative efforts of the subcommittees on research and on methods of tests.

A new field of endeavor was inaugurated through the appointment of a special subcommittee to explore and study the need for a specification for pozzolanic materials for use with lime products. In the field of chemical lime, the types of lime most desirable for silica brick manufacture will be determined, and work will be started on two proposed specifications for lime for neutralizing acids.

Committee C-7 will hold its next meeting during the 1954 A.S.T.M. annual meeting. Chairman of the committee is J. A. Murray, Massachusetts Institute of Technology, Cambridge, Mass. Robert S. Boynton. National Lime Association, Washington, D. C., serves as secretary.

Committee C-9 On Concrete and Concrete Aggregates

Recognizing the greatly expanded use of dry concrete mix materials in packaged form, Committee C-9 on Concrete and Concrete Aggregates, which met on February 1 and 2, authorized the formation of a new subcommitte which will study and possibly propose specifications as a means of insuring a high quality product in this field. This subcommittee will be formed with suitable personnel, from among those presently on the committee or persons invited on a consulting basis to provide a group qualified to prepare such specifications.

As a result of a co-operative test program by the subcommittee on Chemical Reactions of Aggregates in Concrete, two recommendations were presented which had been previously circulated to the committee in a written report. The recommendations include a proposed meth-

od for measuring potential volume change of cement-aggregate combinations and a revision of the existing chemical method (A.S.T.M. designation C 289), in which the single-end point titration method is substituted for the double-end point calculations. This report will first be published in the *A.S.T.M. Bulletin*.

In the study of durability of concrete, it was reported that efforts will be concentrated on an analysis of supposedly good concrete structures and on construction practice in the over-all study of the durability of concrete. The current work of the subcommittee on dynamic testing of concrete is on pulse velocity techniques; and a proposed method is to be circulated to the committee for information. New work in the study of aggregate mineralogical characteristics will consist of developing a recommended practice for field investigation of deleterious materials in mineral aggregates.

Tentative Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory (C 192) was recommended for adoption as standard, with certain revisions including more specific descriptions of tamping rods. A tentative revision also will be proposed at the next meeting of the committee as the result of a study made on the effect of capping materials on concrete cylinder strengths. A new *Tentative Method of Test for Volume Change of Concrete Products* was accepted, subject to committee letter ballot, which is intended for use as a routine standardized procedure on such concrete products as masonry units, concrete pipe, cast stone, or concrete sections.

Subcommittee study has now been completed on three important activities of the committee, namely, a *Proposed Specification for Lightweight Aggregate for Insulating Concrete*, a *Proposed Specification for Fly Ash for Use as an Admixture in Portland-Cement Concrete*, and a group of revisions of the *Standard Specifications for Ready-Mixed Concrete (C 94)*. These proposed specifications will be circulated to the committee in order that action may be taken at the next committee meeting. Several tentative methods of tests were approved for adoption as standard including the following: *Tentative Method of Sampling Fresh Concrete (C 172)*, *Tentative Method C 192* (as referred to earlier), *Tentative Method of Test for Air Content of Freshly Mixed Concrete by the Pressure Method (C 231)*, *Tentative Method of Test for Comparing Concretes on the Basis of the Bond Developed with Reinforcing Steel (C 234)*, and *Tentative Recommended Practice for Petrographic Examination of Aggregates for Concrete (C 294)*. The tentative revisions of the *Standard Method of Test for Cement Content of Hardened Portland-Cement (C 85)* were also approved for adoption as standard.

Committee C-9 will hold its next meeting during the 1954 A.S.T.M. annual meeting. L. W. Teller, Bureau of Public Roads, Washington, D. C. is committee chairman and Bryant Mather, Waterways Experiment Station, Jackson, Miss., is secretary.

Committee C-11 On Gypsum

Recognition of the use of aluminum foil in connection with gypsum lath was made by Committee C-11 on Gypsum at its meeting on February 3. A revision in the *Specifications for Gypsum Lath (C 37)* will include a requirement and test method for this material, the test method including a determination of thermal properties. Other revisions accepted by the committee include a completely rewritten draft of *Tentative Specifications for Gypsum Concrete (C 317)* and changes in the sampling requirements of *Specification for Gypsum Plasters (C 28)* and *Specification for Gypsum Partition Tile or Block (C 52)*.

Suggested changes in the gradation of aggregate in the *Tentative Specification for Inorganic Aggregates for Use in Interior Plaster (C 35 T)* have been referred to the appropriate subcommittee, including recommendations from the Contracting Plasterers International Association involving closer grading limits of sand, and recommendations from the Vermiculite Association. The committee is planning to meet during the 1954 A.S.T.M. annual meeting. L. H. Yeager, Gypsum Association, Chicago, Ill., is secretary of the committee.

176th A.I.M.E. Meeting

(From page 87)

Of interest to mill operators was the topic of a paper by W. J. McLean on the subject *Fluid Drives in the Mining Industry*. At the mill of Barvue Mines, Northern Quebec, four Hardinge Tricone ball mills were installed for the grinding circuit. Each mill called for a 600-hp. motor, and since the mine was at the end of a lengthy transmission line, starting presented a problem. Fluid drives were selected which permitted driving motors of the squirrel cage type.

With this installation the motor can be brought up to speed with the mill idle; the mill can then be rotated by engaging the drive. When power demands are heavy at this remote location, and an additional ball mill is required in the circuit, the use of fluid drive permits all mills to be stopped, while the driving motors are left running. The extra motor is started, and the ball mills are then started one by one through the fluid drive.

Mr. McLean pointed out that with fluid drive a motor lower in initial cost and in maintenance could be used. Fluid drive also allows the use of less expensive starting devices.

At the Iron Ore Company's new loading dock at Seven Islands, Quebec, 11 large conveyors are being equipped with fluid drive. In this application, overload protection of the conveyor motor is a characteristic of fluid drive.

L. H. Weston described the use of a television camera to control the operation of ore bins, and also to control the stripping of overburden in strip mining of coal.

During the meeting, the incoming president, Leo F. Reinartz, Armco Steel Co., appealed for more interest on the part of students towards following the engineering profession as a career. He stated that the number of engineering graduates this year will be enough to fill only half the demand from industry. Traditionally, one-third of the engineering graduates have entered the mining and metallurgical field.

Labor Developments

(From page 127)

was here seeking to sever units which it may have deemed possibly tenable but which were in fact based upon its extent of organization."

Finally the Board ordered an election among all the production and maintenance employees except for those in the carved-out units.

It is likely that the Board's new policy will protect many established bargaining units from unwarranted raids by predatory unions. It will thereby benefit the employees who are often the victims of the unrest and low output caused by such raids.

It is claimed by some that the new policy will also do away with most jurisdictional disputes. Whether it will have this salutary effect, remains to be seen.

Pacific Coast Aggregates, Inc., gives $550,501 as the net profit in 1953 (68c per share), compared with $547,630 (67c per share) in 1952. Sales last year increased to $15,943,255 from $15,778,511 the year before.

Thread Repairs with Wire Inserts Reduce Truck Maintenance Costs

By using coiled wire inserts to repair stripped and worn threads in the castings of the sand- and stone-handling equipment, the maintenance mechanics of Colonial Sand & Stone Company, Inc., of New York City have reduced the cost of keeping their company's equipment in A-1

1—First step in insert repair of worn or stripped threads in a truck engine cylinder block is to drill out the damaged threads.

condition. Ease of installation and the slight additional space it occupies when installed makes the insert responsible for this maintenance cost saving.

Inserts are used to repair damaged threads in two areas of maintenance activity: (1) reworking worn threads during periodic overhaul of equipment; (2) on-location repairing of damaged field equipment.

Periodically each of the company's 400 heavy-duty road vehicles is disassembled for inspection and reconditioning. The threads in tapped holes of all parts are inspected for wear; and if the threads are worn beyond manufacturer's minimum specifications, they are replaced with an insert.

When capscrews holding operating elements of field equipment (conveyors, draglines, scoop shovels, etc.) develop excessive play, the maintenance department is notified and thread repairs are made immediately without moving the equipment from its working location.

During overhaul operations at their garage in Long Island City, N. Y., the mechanics install inserts in any tapped hole where the threads are worn and the capscrews fit loosely. They know that capscrews in worn threads invite breakdowns.

Mechanics frequently find worn threads in the tapped holes that receive capscrews for holding clutch housings to the diesel engines. Eight 5/8-18 capscrews in tapped holes in the block must withstand starting torque when the driver engages his clutch. When the tapped holes are reconditioned with inserts, capscrews that hold the clutch housing to the engine block can be retightened with enough torque to prevent movement, wear, and eventual thread failure.

Thread failure also occurs in the valve housing of the air brake system. Threads tapped in the aluminum valve housing often strip during disassembly or reassembly for overhaul and repair. All damaged or stripped threads are replaced with 5/16-18 inserts.

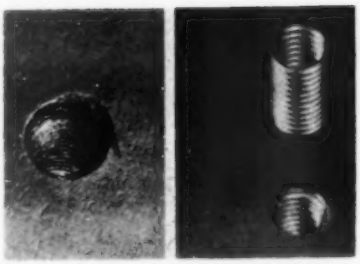
Worn threads in the power flange of the diesel engine crankshaft are also repaired with wire thread inserts. Threads in tapped holes of the flange receive sixteen 1/2-20 capscrews that join the crankshaft to the clutch assembly. Repeated motor torque changes cause these threads to become worn at an accelerated rate, until failure causes truck breakdown. During reassembly after engine overhaul, these threads are inspected carefully; and if found unsatisfactory, they are repaired.

In field repairs these wire inserts prove extremely valuable when housings of power take-offs get loose from overloads or vibration, and worn threads in the casting prevent the capscrews from staying tight. Worn threads permit dangerous movement between housing parts, which, if not corrected, will cause breakdown. By removing its hold-down bolts, a bell housing can usually be shifted to one side to

2—New threads are tapped into the redrilled hole with a special tap.

expose the screw holes under it. Worn threads in exposed screw holes can be drilled out on the spot, the new hole retapped, and the insert installed. The equipment is usually back in service in two to three hours. The inserts are also used to repair threads in castings where capscrews hold down cover plates that start to leak because of vibration-worn threads.

In contrast with this improved technique in heavy equipment maintenance, previous methods of thread repair always involved the removal of the damaged part from the vehicle. Also, many castings could not be repaired by retapping for oversized bolts because casting walls were too thin. Holes filled with weld metal were difficult to machine, and threads produced were too brittle for satisfactory service. In many cases, costly and otherwise serviceable castings had to be discarded because of worn or stripped threads.



Threads in the tapped hole at the left are worn beyond safe usefulness. Vibration and impact from sudden torsional loads on threaded assembly causes threads in the casting to deteriorate. Threads in the insert-lined hole at the right are seated tightly into the casting and will not move under vibration or impact. Threads of the mating capscrew contact the wear-resistant stainless steel wire of the inserts.

An analysis of the three-step procedure that service mechanics use in repairing damaged threads with Heli-Coil inserts explains why these inserts can be used to repair threads even when they are located in thin wall sections, and why they are equally adaptable to field or shop repair.

Step No. 1—Worn or stripped threads are drilled out. A standard drill is used to remove only the remains of the damaged thread. The drilled hole diameter is no greater than the major diameter of the original thread.

Step No. 2—The redrilled hole is retapped according to specifications with the tap supplied by Heli-Coil Corporation of Danbury, Conn., which manufactures the inserts. This tap has the same number of threads per inch but an outside diameter slightly greater than the original thread.

Step No. 3—The insert is turned into the retapped hole by turning the inserting tool in a clockwise direction.

Because of their successful employment of these inserts, the maintenance mechanics at the Long Island City garage of Colonial Sand & Stone Company have assembled into kit form a complete selection of Heli-Coil inserts, taps, and inserting tools. In this way they keep their repair equipment in order ready for immediate use whenever a worn or stripped thread is discovered.

3—New threads of original size and fit are installed into the casting by turning the coiled wire insert into the prepared hole.

new machinery and supplies

PIT AND QUARRY

● Blasthole Drill

The largest hammer drill yet designed is the "heart" of its new Challenger blast hole drill, says *Joy Mfg. Co.* It will drill 4½-in. holes to depths of more than 50 ft. even in hard igneous or metamorphic rock. The 5½-in. hammer-type drill, mounted on a 26-ft. feed to give 20-ft. steel changes, furnishes ample drilling power for this capacity.

Three different mountings are

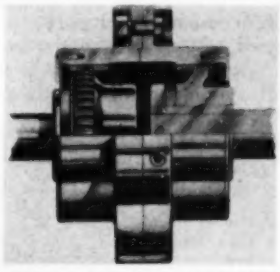
available. A self-propelled 3-wheel chassis, using a commercial tractor power unit, has an integral dust collector and a hydraulic pump to raise and lower its mast. Another 3-wheeler is propelled by two reversible piston-type air motors, and has an air-powered hydraulic system. The third mounting comprises the drill and feed and the brackets needed to mount the drill on the producer's own crawler-tractor.

Two-inch round sectional steel with a ¾-in. air hole for powerful blowing action is used. Other outstanding features of the Challenger are its improved "drill and blow"—simultaneous drilling and blowing, its force-feed lubrication, replaceable cylinder liners, and replaceable bushings at all wear areas.

Circle No. 37

● Flexible Coupling

Extreme shaft misalignment is compensated for by a new spline (gear-type) flexible coupling. The teeth are specially cut to put great-



er tooth area into contact than conventional teeth, and are hardened to 50-55 Rockwell C. Less backlash and the ability to compensate for offset or angular misalignment, or both types, are among the virtues of these *Ajax* Dihedral couplings. Seals keep dirt out, lubrication in.

Circle No. 38

● Cable Drill

A new cable-type drilling machine developed by *Loomis Machine Company* will take 2,000 lb. of tools to 1,000-ft. depth, or 2,200 lb. to normal blast hole depths. It has a 1,000-ft. spooling capacity of ¾-in. cable on each side of the divider.

Designed for mounting on a medium truck or a crawler tractor, the new drill has a 40-ft. telescoping mast, with braces positioned and locked at the machine frame level. The mast top has an improved rubber cushion shock absorber. A leveling device expedites set-up time. Automatic or worm feed can be furnished.

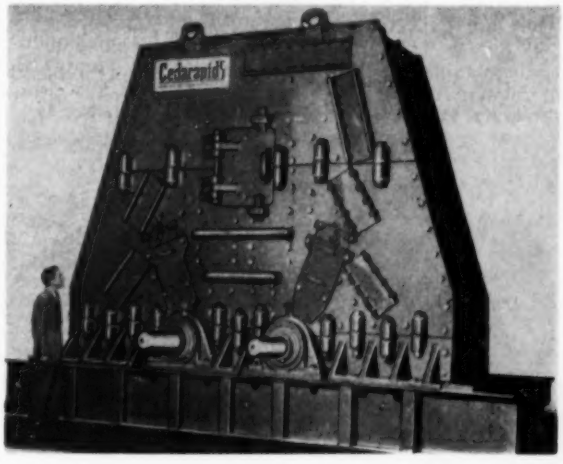
Circle No. 39

● Cabs for Tractors

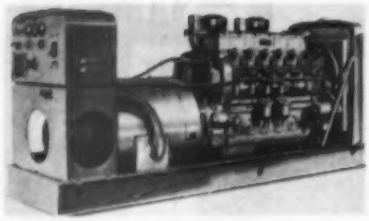
Rain, wind and sun are no longer problems for your tractor and tractor-shovel operators. *Campbell De-*

tachable Cab Co. offers streamlined, lightweight cabs featuring safety-glass construction, sliding side windows, windshield wipers and heater-defroster units. The cabs tilt upwards and sidewards to let the operator in and out.

Circle No. 40



● Biggest Cedarapids double impeller impact breaker, this new model has capacities of 500-800 tph of minus-4 in. material. Feed can be as big as 53x60 in. Reduction to minus-3 in. minimum in one pass is possible, the ratio of reduction running as high as 40 or 50 to 1 in some applications. Impellers rotate in opposite directions to break more material in suspension, with 50 percent less metal contact and less wear on the machine.
Circle No. 41



● More Powerful Diesels

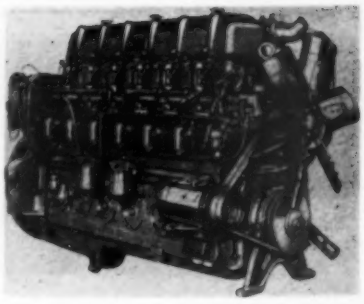
Fifty-two major advancements and refinements have been incorporated in the new P&H diesel two-cycle engines line, *Harnischfeger Corp.* announced. The new engines feature greater simplicity of design and construction, giving increased dependability, more power, higher usable speeds, greater efficiency, with more horsepower per pound and lower cost per horsepower.

Output is now 36 percent greater, and operating speeds are increased to 1800 rpm. At this speed, the engines rate from 58 to 255 hp. Compression ratio is 16 to 1. Bore and stroke are 4½-by5½ in. Displacement is 87 cu. in. per cylinder.

The cylinder assembly is redesigned for improved efficiency and longer service, P&H says. More effective scavenging is achieved by a new valving arrangement and redesigned porting that imparts greater turbulence. New blower construction gives more fresh, cool air to all cylinders, increasing power ratings.

Cooling capacity is increased in the new engines. The entire lining now receives uniform cooling. Vital surfaces of the special alloy cast iron liners are kept "oil wet" at all times. Steel jackets, also new, are Parkerized for maximum corrosion resistance. Components of the liner assembly can be replaced separately.

The combustion chamber is redesigned, pistons are now flat topped and special injector tips provide a soft spray pattern with a single hole. A new exhaust manifolding gives more effective carry-away. Camshaft is redesigned for better timing, easier starting and more rpm.



Low weight is a major characteristic of the new engines. The 6-cylinder model weighs 1800 lbs., has a weight-to-power ratio of 7.6 per hp. Shown are a 75 kw diesel-electric generator set and a 6-cylinder engine in the new design.

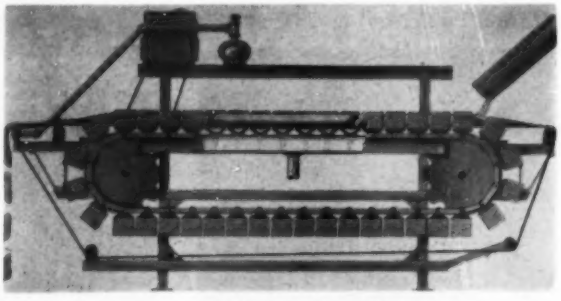
Circle No. 42

● New Motor Line

More power in a smaller, more functional package, lighter weight and several other features highlight the 1954 *Louis Allis* electric motor

line, redesigned to conform with the new NEMA standards. Motors are available in all standard enclosures —open, drip-proof; totally-enclosed, fan-cooled; and explosion-proof. They are built in frame sizes 326 (40 hp. at 3,600 rmp.). Bearings easily obtainable from local stocks are among the mechanical features.

Circle No. 43

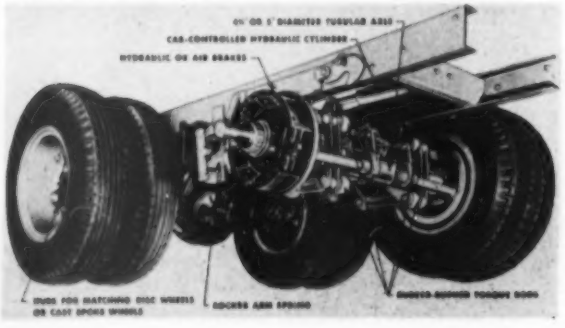


● Continuous liquid-solids separating is performed by this Tray Belt Filter just developed by Hardinge Co.

● Trailing Third Axle

The payload advantages of trailing axle six-wheelers, cab-controlled traction practically equal dual-drive, and single-axle economy when the truck is empty are offered truck operators by a new-type trailing third axle. Weighing about 500 lb., the *Hydro-Trac* is hydraulically controlled to give selective weight distribution, in ratios ranging from 50-50 for normal conditions, 80-20 for maximum traction, and 100-0 for empty trips, when the added axle lifts clear of the road.

Circle No. 44



● Three trucks in one! This new Hydro-Trac trailing 3rd axle, available for all trucks, is hydraulic controlled to permit the driver to distribute axle loads or retract the 3rd axle altogether.

● Dewatering Filter

A radical design features a new type of continuous liquid-solids separating device announced by *Hardinge Company*. Called the Tray Belt Filter, it can be used for (1) relatively fast filtering materials, (2) washing salts and the like (by direct or counter-current action) or (3) filtering solids not readily maintained in fluid suspension prior to filtering (coarse sand or materials devoid of supporting slimes, etc.).

The unit consists of a series of connected, traveling, perforated trays in sliding contact with a suction box beneath and supporting a filter cloth which moves with (but is not attached to the trays.) The mixture is fed by gravity at one end of this conveyor-like structure. The suction box removes the liquid, and the dewatered filter cake drops from the discharge end. A washing action may be combined with filtration by use of water sprays above the filter cloth. A counter-current washing action can be obtained by means of a sectionalized suction box and re-use of the wash water from each section.

Circle No. 45

● Rear-Dumping Tractor-Trailor Team

Invading the off-the-road rear-dump transport field long dominated by the motor truck, *Athey Products* and *Caterpillar Tractor* have joined forces to present a new two-wheel Athey trailer that teams with the Cat DW-21 two-wheel prime mover to form a highly-maneuverable off-the-road haulage unit. The team hauls 33 cu. yd. of rock at speeds up to 20 mph., and makes non-stop turns within a 35-ft. space. The load is distributed almost equally on the two axles for peak tractor performance. No. 2 domestic burner oil is consumed instead of premium diesel fuels.

The Athey PR-21 trailer features a frameless design, somewhat similar to a scraper to give maximum stability to the team. This lets the body nest between the draft-frame, giving low overall height (9 ft. 5 in. at front) and a low center of gravity. The 123-in trailer tread gives additional stability in high-speed work. The open-mouthed body provides a good target for big dipper loading, and the unit is designed to haul capacity without spillage. High-strength, all-welded steel construction includes a "sandwich" bottom — heavy oak planking between ¾-in. top armorplate and ½-in. bottom plate.

Hydraulic hoists control dumping to a 60-deg. angle. The body's rear lip extends well beyond the rear of the tires to cast out the load safely. The wheelbase (nearly 20 ft.) shortens to 13 ft. 4 in in dumping position, with either the front or rear wheels drawing closer to the other, depending on which is braked. Body height at the extreme dumping angle is just over 19 ft.

The tractor member of the team is powered by a 6-cylinder Cat diesel producing 225 hp at 1900 rpm. It steers hydraulically with double-acting pistons pivoting it 90 deg. in either direction. Many features designed to cut operator fatigue and increase job efficiency are built into the DW-21.

The trailer weighs 33,000 lb. The entire team weighs 57,250 lb. Rock-grip 24:00 x 29 tires (36 ply) are used on both units, permitting rotation, thus cutting tire costs. Other components are interchangeable with those of Cat 21 scraper and Athey-built units.

Circle No. 46

● Gear Improvement

Called a major improvement in gearing for power transmission, a new gear tooth design has been developed by *American Flexible Coupling Co.* This fully crowned tooth design is said to give improved transmission, reduce stresses, and provide for angular and lateral misalignment with minimum backlash. The torque load is carried on the flank of the teeth rather than the edges, for greater loads at higher speeds. The gear gives free axial movement. A close fit on the crowned tips and flanks of the teeth induces a ball-and-socket action between hub teeth and internal sleeve teeth to assure quiet, smooth performance.

Circle No. 47

● Electrode for Manganese

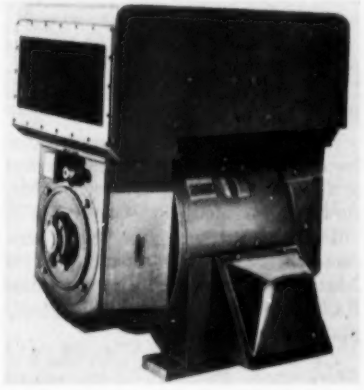
Product of two years research, a new electrode for welding and hardfacing mangenese steel, just introduced by *Alloy Rods,* is said to combine superior strength with abrasion resistance four times that of manganese steel.

The core wire in these Super WH electrodes contains about one-third alloy, balanced in proportions new to hardfacing electrodes. Having a carbon content of only 0.35 percent, the Super WH is said to produce an equivalent hardness of alloy steels containing three times this content. The carbon content prevents spalling and flaking of the weld deposit.

Circle No. 48

● Enclosed DC Motor

A new totally-enclosed, unit-cooled, d-c motor for use in severe atmospheres has been announced by *General Electric.* Smallest standard model of its type, it is available in ratings from 15 to 200 hp. It features 50 percent more heat transfer in a



37 percent smaller unit than previous designs.

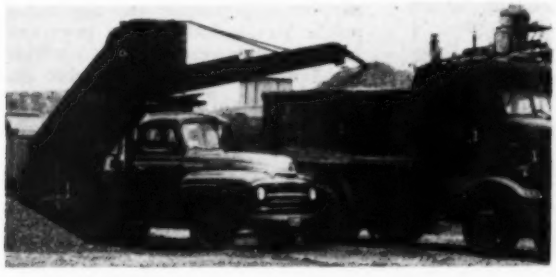
Compact cooling units, mounted completely within the length and width of the motors, permit operation at very low speeds for long periods, because ventilation is independent of the motor speed, GE says. A double system of blowers is used, with a thermostatic relay to protect the main motor should the blower-motors fail. Shown is the 75 hp. 1,150 rpm motor in developmental cooler.

Circle No. 50

● New Cutting Edge

A special alloy steel cutting edge has been developed by *Shunk Mfg. Co.* for blades used on scrapers, bulldozers, graders, etc. Called the Rhino Blade, it is ruggedly built to resist abrasion and reduce downtime for replacement. Precision-machined and rolled to exact specifications, the Rhino Blade is stocked in all popular sizes.

Circle No. 51



● Three to five yards of aggregate per minute are loaded by this one-man truck-mounted Eagle loader, that speeds truck-fashion from place to place in the storage yard.
Circle No. 49

personal mention

The following changes and promotions in the sales department of the Ideal Cement Company were announced recently:

JAMES N. WAGNER was transferred from Salt Lake City to the Pacific Division, with headquarters at Fresno, Calif.

CHARLES J. NOYES, formerly at Omaha, is now with the Oklahoma Division, with headquarters at Oklahoma City.

Production department promotions and transfers announced included the following:

ELDRED F. BOLLINGER, who was plant manager at Redwood City, Calif., has become plant manager at Baton Rouge, La.

STANLEY SAJKOWSKY was transferred from the plant manager's post at Gold Hill, Oreg., to succeed Mr. Bollinger at Redwood City.

FRANK A. SUTCLIFFE was promoted from the post of manager of Ideal's California and Oregon Coast Railroad at Gold Hill, Oreg., to plant manager there.

GEORGE KOONSMAN, who was formerly plant engineer at Boettcher, Colo., has been made assistant plant manager at Devil's Slide, Utah.

GAYLE N. DAVIS was transferred from the post of plant manager at Ada, Okla., to that of plant manager at Boettcher, succeeding DAVID O. HOWE. Mr. Howe exchanged this position for that of Mr. Davis, to become manager at Ada.

J. A. GUSTIN, assistant manager of Gouverneur Talc Company, Gouverneur, N. Y., for the last year, is leaving to become a general partner of W. S. Coleman and Company, Martinville, Va., in which he has acquired a partial interest. Mr. Gustin joined Gouverneur Talc as mill superintendent in 1947.

DAVE WOOSTER has been appointed works engineer of the Gabbs, Nev., plant of Basic Refractories, Inc., Cleveland, Ohio, producers of granular-type refractory materials. Mr. Wooster will have charge of maintenance over the quarrying, crusher plant, and burning plant operations, and will supervise engineering and maintenance and construction of new facilities. Prior to joining Basic, he was mechanical engineer and head of the Equipment Engineering Section, Explosives Department, United States Ordnance Test Station Inyokern, China Lake, Calif.

The following new appointments at the Alpena mill of the Huron Portland Cement Company were announced recently by H. R. Schemm, vice-president in charge of operations:

W. G. MacDonald

C. P. Harris

WILLIAM G. MACDONALD was appointed mill manager, replacing C. P. HARRIS. Mr. MacDonald served as superintendent for 12 years before becoming assistant mill manager in 1953.

Mr. Harris retired as mill manager on January 1. However, he has agreed to continue in active service on the mill staff as consulting engineer. He will also continue his safety activities, which include Huron representation on the P.C.A. Accident Prevention Committee.

OSBORN R. ARCHER has been appointed assistant mill manager. Before his appointment, Mr. Archer was assistant superinendent of distributing plants and vessels.

ELMER H. EVANS, assistant superintendent, production, was appointed superintendent of the mill.

RALPH E. SIMMONS was appointed to the newly-created position of assistant superintendent, personnel. He will have plant-wide responsibility for the administration and coordination of personnel matters.

LOREN C. BUTTON has been appointed sales manager of Superior-Marquette Cement Company at Portsmouth, Ohio, to fill the vacancy left recently by the resignation of W. B. CARDER.

L. C. Button

Mr. Button was formerly a salesman in the Central Division of Superior-Marquette's parent company, Marquette Cement Manufacturing Company, with which he has been affiliated for the last 12 years.

FRANK B. WARREN, president of the Bessemer Limestone & Cement Company, Youngstown, Ohio, was elected president of the Greater Youngstown Area Foundation at a meeting of its executive committee. Mr. Warren has been especially interested in the Foundation's new industries program, which has aided in bringing more than 300 smaller firms to the Youngstown area.

Washington News

(From page 138)

ministration has the widest latitude. It can reduce both down payments and carrying charges substantially by changing the regulations of the Federal Housing Administration and, if need be, by increasing its mortgage buying activities. It is in this area of housing that action is expected shortly. Despite the exceptional housing boom, there is still a substantial need for new and better housing. Making housing available is generally regarded as politically smart. It not only makes friends with large numbers of low-income people by giving them employment, but it also cements a lasting friendship by giving them better places to live and raise their children. Furthermore, the general experienc has been that mortgage loans are good investments. Defaultings have been relatively few, and the likelihood of eventually liquidating without loss is very high.

Finally, as a last line of defense, the Administration can, and probably will, go to Congress for money to support a large-scale anti-depression public works and lending program. If this sounds very similar to a New Deal program, that is probably exactly what the President meant when he said in his economic report to Congress that, "To protect and promote economic stability, we should take bold steps." It is unlikely that an unpalatable label would deter him from those steps.

Obituaries

ALLAN H. BUTZ, 51, vice-president of the International Division of Minnesota Mining & Manufacturing Company died unexpectedly on February 15 at Del Ray Beach, Fla., of a heart attack while vacationing with members of his family.

Mr. Butz joined 3M in 1925 as a laboratory helper, and in 1926 he was made chief clerk in the New York office. Entering sales work, he became acting sales manager of the New York office in 1928 and sales manager in 1930.

He was promoted to the post of eastern sales manager for the company in 1936 and eastern regional manager in 1944, when he moved to St. Paul. In 1951 Mr. Butz was made vice-president in charge of sales in the 3M International Division. He helped establish branch offices throughout the world and traveled extensively in Europe and South America.

BROR GUSTAV DAHLBERG, founder, former president, and retired chairman of the board of The Celotex Corporation, died on February 20 of a heart attack in his home at Miami Beach, Fla. He was 73.

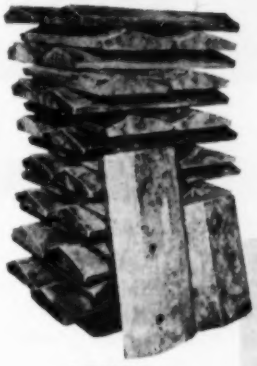
Mr. Dahlberg was born in Sweden and came to this country when he was 10 years old. He was engaged in various industries, and in 1916 he was named vice-president of a paper manufacturing company. He continued in this position until 1921, when he organized The Celotex Corporation. With a group of Minnesota business men and engineers he had developed a process of making structural insulating board from bagasse, the fibrous residue remaining after the juice is extracted from sugar cane. The Celotex Corporation was established for manufacture of this new board and rose swiftly to become one of the nation's foremost producers of general building materials.

Mr. Dahlberg retired as president of Celotex in 1948 and as board chairman in 1951, but continued as a director of the corporation.

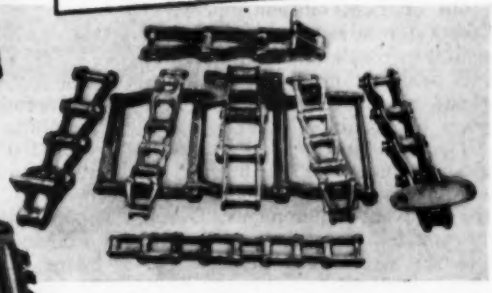
MRS. DORIS M. FARRELL, owner and operator of a gravel business near Dallas, Tex., died recently in a local hospital after a lingering illness. After the death of her husband, Hunter T. Farrell, several years ago Mrs. Farrell took over the operation of the business, changing the firm name to the Mrs. H. T. Farrell Gravel Co.

Specify TISCO® MANGANESE STEEL

The longest-wearing steel for the toughest Wear Parts!

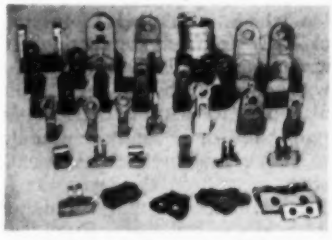


Ball Mill Liners



Chain for conveyors, elevators, dredges, etc.

Jaw Crusher Parts



Pulverizer and Hammermill Parts

Simply ordering "manganese steel" wear parts does not assure the fullest durability and toughness of which this great wear-resistant steel is capable.

Add the word "TISCO" to your specifications and orders. Get manganese steel at its best—produced by Taylor-Wharton, first to cast Hadfields manganese steel in America and offering the longest experience in the production and application of manganese steel to parts subject to heavy impact and abrasion.

TISCO assures the right analysis for your job—soundly cast and properly heat-treated—ground to accurate dimensions—inspected by the most modern techniques, including Gamma Rays, to insure perfect castings.

Specify TISCO Manganese Steel when ordering new equipment or replacement parts. Write for descriptive bulletins.

Repair and rebuild with TIMANG WELD ROD

Flows easily, air toughening, no quenching. Produces clean, uniform welds, equal in strength to original metal.

TW Founded 1742 TAYLOR-WHARTON IRON AND STEEL CO.

High Bridge, N. J. — Cincinnati, O. — Birmingham, Ala. — Easton, Pa.

Clinker Grinding

(From page 137)

ations were actually begun on October 20. Construction of the new units was complicated by the fact that the existing clinker-grinding department had to be kept in operation and a temporary system of clinker conveyors and feed bins established to continue grinding operations. The changeover from the old department to the new was made over a period of ten days, and as a result there was little lost production.

The high demand for finished cement made it necessary to put the mills in operation with the immediate goal of maintaining plant production, rather than obtaining maximum or most efficient operation. Except for adjustments of the air separator, regulation of the feeders, and modification of the mill feed spouts, no great attention has been given to operation refinements.

The mills operated at a capacity of approximately 75 to 80 bbl. per hour each, which more than satisfied the plant requirements. During the first few days of operation, before the circuit was properly balanced, the mills were producing a cement with a Wagner specific surface area of over 2,000. Considerable adjustment of the air separator was required to bring the product fineness down to the requirements of standard cement.

Since the mills were placed in operation, they have been running on a regular schedule with few interruptions. For the last several months operations have been virtually continuous, with the mills operating on a 24-hour-per-day basis, five days a week. Actually, during a 27-day period the two units were operated 1,230 hours out of a possible 1,296 hours, or a 95 percent availability.

Since the initial operating period the mills at Superior have been producing between 90 and 100 bbl. per hour per mill. Average production over a typical six-week period was 91.3 bbl. per hour.

Therefore, simplicity of operation, reduction of multiple units, and considerable reduction in power consumption per unit of production all tended to stamp this installation a success. Continued study and adjustment of this particular circuit will certainly result in continued progress toward higher mill production, to the continuing benefit of the company.

It is important to note that the high mill availability and consequent high operating efficiency is due principally to the ease of keeping the mill circuit in balance. There are less variables to keep under control, and most alterations to the circuit can be made by feed adjustments.

The annual report for 1953 covering the operations of the New England Lime Company states that the net income was $197,856, or $2.84 per share, compared to $2.37 per share in 1952. Net sales were $1,735,005, an increase of 3.4 percent over 1952 sales.

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

Zoning Ordinance Unconstitutional

Recently a higher court rendered an unusually important decision of special importance to all manufacturers and processors of nonmetallic products. This higher court held that no state, county, or city zoning ordinance can stop operations of a plant or other business which was in operation on the date the ordinance was enacted.

For illustration, in *Livingston Rock & Gravel Company v. Los Angeles,* 260 Pac. (2d) 811, it was shown that Livingston Rock & Gravel had for several years operated a batching plant for loading ready-mixed concrete trucks with aggregates. Recently the county passed a new ordinance which prohibited Livingston Rock & Gravel from conducting the concrete mixing plant in this area. It was contended by the county officials that the plant is detrimental to public health or safety, especially since so many new residences recently were erected in this area. It is interesting to observe that this higher court held the ordinance invalid as to the Livingston Rock & Gravel Company, and said: "Does the broad view of the police power which justifies the taking away of the right to engage in such businesses in certain territory, also justify the destruction of existing businesses? We do not think that it does."

This court also held that the provisions of the ordinance were unconstitutional, so far as the Livingston Rock & Gravel Company was concerned. In this respect, the court said: "It is apparent that at the time plaintiffs (Livingston Rock & Gravel Company) erected their plant, made their investment in equipping it, and commenced to use it, its operation was perfectly legal. It is likewise obvious that plaintiffs had a vested property right in the operation of their plant of which they could not be constitutionally deprived."

The real basis and reason for this decision is that the 5th Amendment of the Constitution of the United States reads in part: "No person shall be . . . deprived of . . . property, without due process of law." Also, the 14th Amendment of the Constitution of the United States is to the same effect, and a similar provision appears in constitutions of the various states.

Must Reduce Hazards

Sometime ago a reader asked, "What legal duty has a sand and gravel company where tires of its motor trucks bring mud from a side road onto a main highway?" Last month a higher court clearly answered this question.

For example, in *Bruno v. S. R. & S. Company,* 263 Pac. (2d) 308, the higher court held that negligence of the *S. R. & S. Company* in failing to reduce or safeguard properly the hazards it had allegedly created along public highway, may result in the company's liability for injuries to any person injured by these hazards.

In other words, if mud is spread onto a main highway by tires of motor trucks coming from a muddy road, the owner of these trucks is duty-bound to reduce this hazard either by sanding the mud, or placing a guard on the main highway to warn automobile drivers to slow up.

Oral Contract Valid

A new higher court has held that one who furnishes materials or services to a city must prove that his contract was accepted and approved by proper public officials; otherwise he may suffer financial losses.

For illustration, in *Marcum v. Sappington,* 261 S. W. (2d) 385, the testimony showed facts, as follows: A city had been engaged in the ex-

pansion of its water plant. A proposal from one Marcum "to furnish all labor, material, and equipment" was accepted in the city's name by its mayor. After receiving this acceptance Marcum commenced to furnish materials and labor to the city, under the supervision of its superintendent, and continued to do so for approximately four years. At monthly intervals, in conformity with this contract, Marcum billed the city for the rendered services and was paid monthly by checks signed by the mayor and city clerk. Later the city adopted a new form of government; and the new administration filed a suit against Marcum to recover the money he had received from the city on the grounds that the contract was invalid because it was not approved by the city council, as required by a state law.

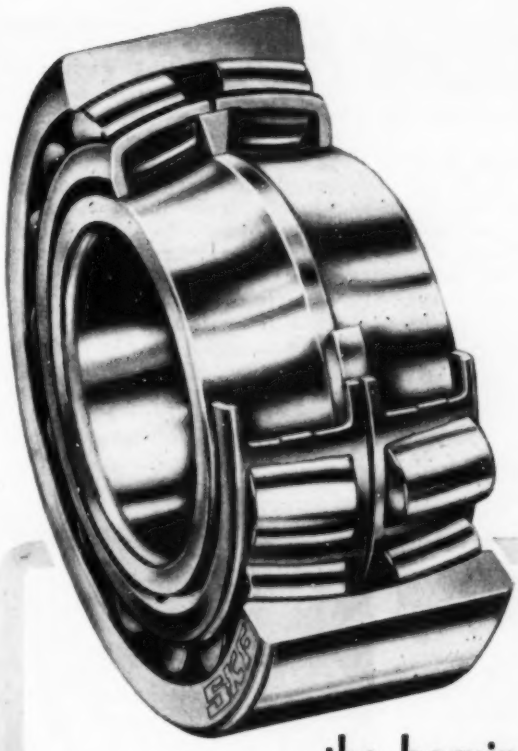
It is interesting to observe that Marcum produced witnesses who testified that several years before the city council had formally accepted an oral proposal of Marcum to furnish material and services to the city. The higher court held that the evidence sustained the determination that there had in fact been a formal acceptance of Marcum's proposal at the meeting of the city council. Hence, Marcum was not required to pay back to the city moneys paid for his supplied services and materials.

Sales Tax No Breach

It is well established law that if a seller cannot give good title to the purchaser of merchandise, or other thing, the purchaser may rescind the contract of sale. Recently a higher court held that failure of a seller to pay sales tax on chattels and equipment does not justify the purchaser in rescinding the contract.

For example, in *Fedele v. Dowling*, 261 Pac. (2d) 295, the testimony showed facts, as follows: One Dowling sold his interest in the D. G. granite business for $8,000. The granite company owned certain equipment used in the business. The purchaser refused to complete the contract, and Dowling file suit. The purchaser claimed that he had a good and legal right to refuse to complete the contract because Dowling had not paid the state sales tax on the equipment. The higher court, nevertheless, held that the purchaser must complete the deal, and said:

"The last argument is that defendant (purchaser) was justified in failing to pay the purchase price under his agreement because plaintiff (seller) did not furnish clear title to the equipment in that there was a sales tax due from the sale of the equipment. There is no merit to this



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BALL AND ROLLER BEARINGS

argument. Plaintiff (seller) states that if defendant (purchaser) paid any portion of the purchase money agreed upon, he would have been able to pay the tax due from the sale of the equipment."

Who Owns the River Bed?

From time to time in the past I have received inquiries from processors of sand and gravel who wanted to know who owns a river bed at an area where the river is not navigable. Last month a higher court answered this and other relevant questions.

For example in *Lynch v. Clements,* 263 Pac. (2d) 153, it was shown that a company took sand and gravel from a river bed adjacent to lands owned by one Lynch. The latter sued to recover the value of materials taken from the river bed.

During the trial the company argued that the state owned the river, which was navigable at this point. On the other hand, Lynch produced witnesses who testified that actually the river was not navigable where it passed his land.

Nevertheless the court found for the company on the ground that the river had been judicially determined to be navigable adjacent to Lynch's land. This court said:

"A navigable river in this country is one which is used, or is susceptible of being used in its ordinary condition, as a highway for commerce over which trade and travel are or may be conducted in the customary modes of trade and travel on water. It does not depend upon the mode by which commerce is conducted upon it, whether by steamers, sailing, vessels or flat boats."

This higher court also explained that title to beds of rivers within a state pass to the state on its admission to the Union, if the rivers are then navigable. If they are not then navigable, the title remains in the United States. Also, the court held that the navigability of rivers, upon which depends the passing of title to their beds to the state, is a federal question of which a federal court has jurisdiction even though such rivers are concededly not navigable in interstate or foreign commerce.

In other words, although a river actually is not navigable at a certain point, yet from the standpoint of law it is navigable, if in the past the federal courts have held that the river is navigable.

Injured In Course Of Employment

Modern higher courts consistently hold that an employee who is injured while he is not acting within the scope or course of his employment cannot recover compensation for an injury or death. A recent higher court held that although an employee is discharged or dismissed from his regular work, yet he still remains in the course of the employment for an hour or so while he prepares to leave the premises.

For example, in *Nicholson v. Industrial Commission,* 259 Pac. (2d) 547, it was shown that a quarry employee customarily lunched with fellow employees in the shade of a loading platform which supported crushed rock before it was permitted to drop into trucks. About 50 minutes before noontime the employee was dismissed until the following morning, because the machinery and platform needed repairs. About one hour later, while the employee was eating lunch under the platform, it collapsed and killed him.

Although the employee was killed an hour after he had been dismissed from work for the day, the higher court awarded his dependents compensation under the State Workmen's Compensation Act and said: "That the deceased employee lost his life by accident no one questions, but did it arise out of his employment and in the course of his employment? The employee is deemed to be within the course of employment for a reasonable period while he winds up his affairs and leaves the premises. In our judgment the taking of food on the coming of the

Fig. 1. Reclaims crowfoot. *Worn areas are first built up with mild steel "Fleetweld" electrode and then hardsurfaced with Lincoln "Abrasoweld".*

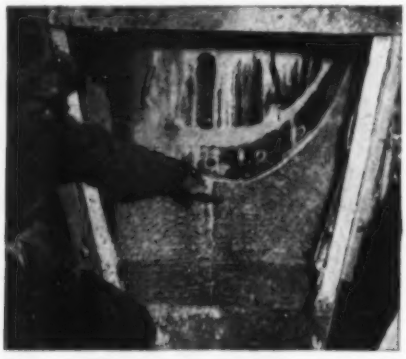

Fig. 2. New face for chute *surfaced with Lincoln "Faceweld" resists severe abrasion and impact from aggregate falling five feet onto chute.*

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GET FREE HARDSURFACING GUIDE

Gives procedures for hardsurfacing essentially every type of requirement. Write on your letterhead to Dept. 5202 Ask for Bulletin 469.

Theory: Hardsurfacing must cost a lot or it doesn't have the alloys to give proper wear under impact and abrasion. (This is not true and here's why.)

Fact: Lincoln "Abrasoweld" is a high carbon-chromium alloy, yet sells for about 31¢ a pound . . . about a third the price of other hardsurfacing.

Fact: Lincoln "Faceweld" has chromium-carbide crystals for severe abrasion and impact . . . but sells for 60 to 70 cents a pound. Comparable rods cost $2.60 a pound.

Lincoln's wear resistance equals and, more often, exceeds other hardsurfacing. So why pay the high prices?

ONLY TWO RODS — But they answer 9 out of 10 hardsurfacing jobs. Lincoln's "Abrasoweld-Faceweld" team simplifies inventory . . . saves money on every job.

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THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

noon hour was to be expected and necessary, and was an incident of the employment, especially where it was partaken of in a relatively few minutes after the lay-off order."

For comparison, see *Year Corporation v. Industrial Commission*, 158 P. (2d) 511. This court held that such acts as getting fresh air, smoking, resting, eating food or ice cream, quenching thirst by water, beer or wine, taking a bath, use of telephone or toilet or other facilities, washing, gathering up working clothes, and transportation to and from work arise out of the employment.

Also, see *Melendez v. Johns*, 76 P. (2d) 1163. This court held that injuries incurred by an employee while leaving the premises, collecting pay, or getting his clothes or tools after termination of the employment are within the course of the employment.

Damage by Truck

A reader asked this question: "Who is liable if workmen at a job direct a truck driver where to deliver materials and the lawn is cut-up or concrete sidewalks are broken, etc.?"

According to a late higher court decision, the hauler of the material is liable. For example, in *Kirschner v. R. Concrete Corporation*, 113 N. E. (2d) 649, it was disclosed that a property owner named Kirschner ordered three loads of ready-mixed concrete from the concrete firm. Kirschner employed workmen to use this concrete in making a platform in his rear yard, 100 ft. from the street. When the concrete arrived, Kirschner was not there to receive it. The driver parked the truck at the curb in front of the house and went to the rear to make inquiry. He found the workmen and inquired of them as to where delivery should be made. They requested him to deliver the concrete in the rear where it was to be spread. To do this required running the loaded truck over two runway strips and a sidewalk. He asked the workmen whether it was "all right to come over the driveway". They said, "Yes." The driver ran the loaded truck over the concrete driveway and damaged the driveway by cracking and crushing the runways in many places.

In subsequent litigation, the higher court held that the *R. Concrete Corporation* must replace the damaged sidewalk and runways, saying: "There is no evidence as to the authority of these workmen, other than that they were engaged as manual laborers to spread this concrete. In the absence of authority

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More and more, owners are finding their MARION dump trailers are "built to take it." The "proof of the pudding" is in repeat business and additional sales. Why? The extra attention given every job . . . the experience and pride in workmanship . . . the highest quality materials used . . . guaranteed performance and service . . . tells the story.

Marion all-welded trailer bodies are constructed to minimize sagging or twisting when loads are uneven or extra heavy.

Marion Telescopic hoists are made of heavy, seamless steel tubing polished to a mirror-like finish to greatly reduce wear. The jacks are connected to the frame in such a way as to prevent binding. They are designed to give equalized lifting power, regardless of the load. Stability is maintained by rigid underbody construction.

Marion Telescopic hoists are especially adapted for extra heavy loads. They provide the advantages of light weight compactness, low mounting and greater efficiency. Whether your requirements call for a standard or special body and hoist to meet individual problems, Marion's "Designed on the job" models withstand greater load-carry capacities . . . require less maintenance and fewer man-hours per ton payload. See your nearby Marion Distributor for all details . . . or write direct . . . today.

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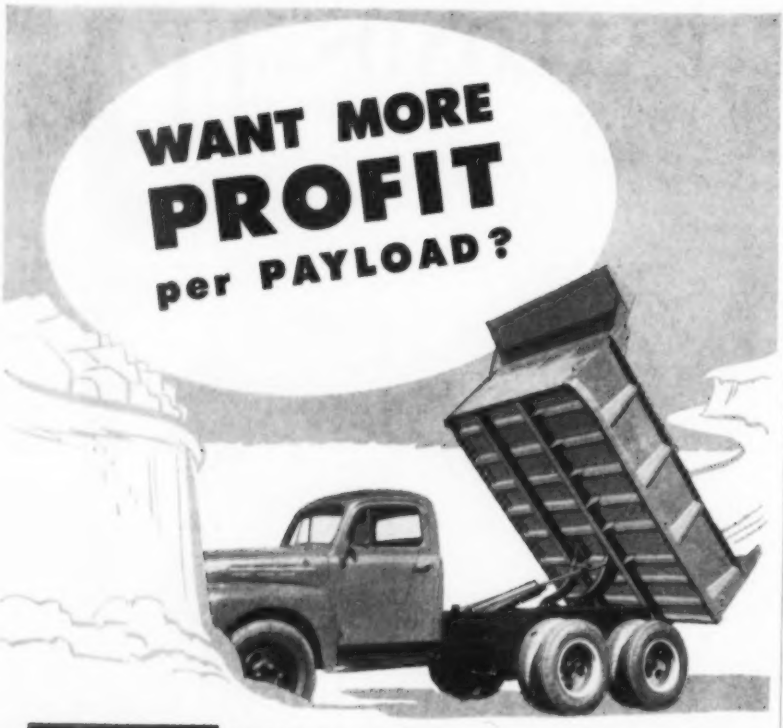
A complete line of standard and special Hydraulic Hoists and Dump Bodies To Fit Every Need



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Converto will design and build bodies to fit your special needs . . . at no extra cost! Send at once for free literature and name of nearest distributor.

The heavy-duty roller bearing pump will lift dump loads with minimum engine power, meaning less power lost and faster operation gained.

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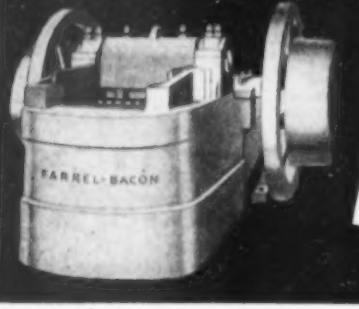

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from the owner, the defendant *(R. Concrete Corporation)* had no right to enter and damage the driveway."

New Minor Law

Sometime ago I received a letter from a wholesaler of nonmetallic products, as follows: "I have read your cases in PIT AND QUARRY saying that a minor can take purchased merchandise and materials back to the seller and demand refund of the full purchase price. If the dealer sells materials on commission, what can the minor do?"

In *Datko v. Gieb*, 113 N. E. (2d) 672, it was shown that a minor entered into an agreement to purchase merchandise and paid the full purchase price of $1,500. After he took delivery of the materials, he took them back to the seller and demanded the return of his money on the ground that he was a minor. The dealer refused to return the purchase price to the minor, and proved that when the sale was made, one Beckett owned the merchandise and that he, the dealer, merely handled the transaction on a commission basis. However, since the testimony showed that the dealer made the sale in his own name, the higher court held: "If the defendant (seller) acted for an undisclosed principal, making the contract in his own name, an infant with whom he deals has the right to look to him for the return of the money upon disaffirmance of the purchase agreement during his minority, or within a reasonable time after becoming of age."

Stored Goods Not Taxable

Considerable discussion has arisen from time to time over the legal question: If a state law exempts from taxation goods and materials in "dead" storage, what services can be performed on the goods without subjecting them to state taxation?

This question was clearly answered by a higher court in the late case of *General Company, Inc. v. Peck*, 111 N. E. (2d) 265. In this case a state law was litigated which provides that merchandise belonging to a non-resident shall not be considered as "used in business" in the state, and is not subject to personal property tax, if it is held for storage only. This court held that this law is not applicable to merchandise on which essential steps in manufacturing or processing are carried on during the storage, but it is applicable where nothing is done in connection with the storage except what is necessary for preservation of the stored merchandise. The court said: "Some precaution is required for the preservation of various commodities."

traffic news

CENTRAL TERRITORY RAILROADS
Freight Traffic Committee

Docket 90250 (1)—Proposed to establish rate of 165 cents net ton in open cars and 238 cents net ton in closed cars on dust, stone, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Durbin, Ohio, to Cairo, Ohio.

Docket 90251 (1)—Proposed to establish on stone, crushed, minimum weight per car 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Durbin, Ohio, to Cairo, Ohio; open car, 165 cents net ton; closed car, 180 cents net ton.

Docket 90277 (2)—It is proposed to establish rate of 363 cents per net ton on dolomite, roasted refractory dolomite in granular form, treated or untreated, clinkered and/or burned to a dead state, from Bettsville, Gibsonburg, Woodville, and Millersville, Ohio, to Chicago, Ill., and Chicago, Ill., district stations. Carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply.

Docket 90284 (1)—Proposed to establish rate of 130 cents per net ton on stone, crushed, or crushed stone screenings, in bulk in open-top cars, carload, minimum weight 90 percent of marked capacity of car except that when car is loaded to full visible capacity, actual weight will apply, from Castalia, Sandusky, and Marblehead, Ohio, to Cleveland, Ohio. Rate will not apply on stone, fluxing, furnace, or foundry, melting or refractory. Rate not subject to ExParte 175-B increase.

Docket 90293—It is proposed to establish rate of 138 cents net ton on sand (except blast, core, engine, filter, fire or furnace, foundry, glass, grinding or polishing, loam, molding or silica) and gravel, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full capacity, actual weight will apply from Vincennes, Ind., to Shawneetown, Ill.

Docket 90299 (1)—It is proposed to establish rate of 131 cents per gross ton on stone, fluxing, furnace, or foundry, melting or refractory (unburned), in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded, etc., actual weight will apply from Clearfield to Ashland, Ky.

GENERAL FREIGHT TRAFFIC COMMITTEE
Eastern Railroads

Bulletin C 1614-7 (Carrier)—Proposed to establish rate of $6.80 per net ton on slag, granulated, unsuitable for further extraction of metal, in bulk, in bags, in closed equipment, or in open-top cars with protective covering, carload, minimum weight 90 percent of marked capacity of car from Huntington, Ind., to Fore River, Mass. Subject to ExParte 175-B increase.

Since 1926, the Sauerman scraper machine pictured above has given efficient, economical service at the crushing plant of Wm. P. McDonald Corp., of Brookville, Florida. The plant consists of two 2-cu. yd. Crescent Scrapers operating on long stockpiles at adjacent angles.

Keep Your Handling Costs Down

Simplify your job of handling materials—just as many other aggregate producers and producers of cement, lime and gypsum have done—by installing a Sauerman Drag Scraper.

Low in initial cost, Sauerman scrapers are noted for long dependable service, even under the most grueling conditions. Labor requirements are minimum . . . only one man is needed to operate these machines. Maintenance costs and power consumption are extremely low.

Whether your handling problems is excavating or stockpiling bulk materials, costs go down and stay down when a Sauerman Scraper is installed. Backed by more than forty years experience, our Engineering Department will advise and assist you in setting up an efficient, long-lasting and profitable operation.

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SAUERMAN BROS., Inc.

Bulletin C 1610-31—Proposed to establish rate of 472 cents per net ton on sand, molding, in closed cars or open-top cars, protected by a protective covering, from Sandale, Ind., to Waynesboro, Va. Minimum weight 90 percent of marked capacity of car. The above rate is subject to ExParte 175-B increase.

Bulletin C 1253-20 (Carrier)—It is proposed to establish a rate of $3.77 per gross ton on mill scale from Huntington, W. Va., to Alloy, W. Va., carload, minimum weight 28 tons. Rate is subject to ExParte 175-B increase.

Bulletin N 1609 M-14 (Carrier)—Proposed to establish on lime, ground or pulverized, in bulk, to meet motor truck competition, $1.45 per net ton, carload, minimum weight 90 percent of marked capacity of car from Buffalo, N. Y., to Silver Springs, N. Y. Not subject to ExParte 175-B increase.

Bulletin N 1609-13—Proposed to establish on limestone, crude, fluxing, foundry and furnace, in open-top equipment, carload, minimum weight 90 percent of marked capacity of car from White Pigment Corp. Siding, Bellefonte, Pleasant Gap, and Howard Chemical, Pa., and Martinsburg and Inwood, W. Va., to Erie, Pa., $2.51 per gross ton. Rate not subject to ExParte 175-B increase.

MONTANA LINES TARIFF

Docket A-987 (S)—Proposed to establish rate of 1066 cents net ton on rock, perlite, crude, crushed or ground, not expanded, carload, minimum weight marked capacity of car, except that when loaded to full visible capacity, actual weight will apply, but not less than 40 tons, from Antonito, Del Norte, and South Fork, Colo., to Sweet Grass, Mont., on traffic destined for Canada. Rate is subject to X-175 increase.

NORTH PACIFIC COAST FREIGHT BUREAU

Docket X NC 3607—Request is made for a through rate on carloads of limestone from Durkee, Oreg., to Toppenish, Wash., minimum weight 50 tons.

Docket NC 3826 (S)—Request is made for a rate of 7½ cents per hundredweight on gypsum rock, broken, crushed, or ground, carload, from Seattle, Wash., to Bellingham, Concrete, and Grotto, Wash., minimum 50 tons.

Docket X NC 3880—Requested to establish following rates on limestone, carload, from Durkee, Oreg., to Nyssa, Oreg., and the following south Idaho points:

Nyssa, Oregon .....127 cents net ton
Fischer, Idaho .....162 cents net ton
Meyers, Idaho .....265 cents net ton
McMillan, Idaho .....292 cents net ton.

Docket NC-3877 (S)—Request rates on silica sand and gravel, carload, from Chewelah, Wash., to Missoula, Mont., 15 cents per hundredweight; to Kalispell, 15 cents per hundredweight; to Butte and Helena, 19 cents; to Billings, 25 cents per hundredweight, minimum 50 tons.

PACIFIC SOUTHCOAST FREIGHT BUREAU

Docket X 4457 (S)—Request was made for a rate of $1.26 per net ton on rock, dolomite, carload, from Hollister to Newark, Calif., minimum 50 tons. Not subject to X-175 increase.

Docket X 4492 (S)—Request rate of 7½ cents, minimum 50 tons, on rock, silica, in closed cars, carload, from Bryman, Calif., to Los Angeles.

WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

Docket A 17359 (b)—Proposed to establish on lime, oyster shells, burned or ground, agricultural, rate of 190 cents per ton of 2,000 lb. from Pinners Point, Norfolk, and Portsmouth, Va., to Enfield, Delmar, Ruggles and Halifax, N. C., minimum weight 30 tons.

Docket A 17392 (c)—Proposed to establish one factor rates based on lowest combination on stone, crushed, in bags, in closed cars, carload 40 tons or visible capacity of car from Lithonia, Ga., to points in Western Trunk Line territory.

Docket A 17421 (c)—It is proposed to establish rate of 497 cents net ton on gravel, in open-top cars, from Elmore, Ala., to Graham, W. Va., and 570 cents net ton to Niagara Falls, N. Y. Minimum weight is 90 percent of marked capacity of car.

Docket A 17329 (c)—Proposed to establish rate of 638 cents net ton on lime, common, hydrated, quick or slaked, in bulk, carload 30 tons, from Knoxville, Tenn., and group in Southern Freight Tariff Bureau 382-F to Ridgewood, Fla.

Docket A 11663—Proposed to establish rate of 823 cents per net ton in open cars, and 872 cents per net ton in closed cars, on stone, rubble, or rough broken, carload, from Crossville, Tenn., to Duluth, Minn., and Superior, Wis.

Docket A 17653 (a)—It is proposed to establish a rate of 475 cents per net ton on open cars and 525 cents per net ton in closed cars, on sand or gravel from Omega, Ohio, to Birmingham, Ala., minimum

Another quarry drilled with ROK-BITS

Carbide Rok-Bits: Chisel or 4-point—gage sizes; 1¼ to 4".

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Carbide Rok-Bits® stand the rapid fire battering of today's rock drilling longer, give greatest service life at lowest cost, at this and other leading quarries nationwide. They drill single gage holes to put more dynamite at the bottom, minimize secondary drilling. Can you afford to waste manpower on less efficient bits? Write for "Guide to Better Footage, Lower Drilling Costs."

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150 Leslie St.	2425 East 37th St.	2514 East Cumberland St.	350 Depot St.
Dallas, Texas	Los Angeles 58, Calif.	Philadelphia 25, Pa.	Asheville, N.C.

weight 90 percent of marked capacity of car, except that when car is loaded to cubical or visible capacity, actual weight will apply.

SOUTHWESTERN FREIGHT BUREAU

Docket 67549 (S)—Proposed to establish on stone, carload, from Lopaz, Mo., to St. Joseph, Mo., rate of 24 cents per hundredweight, except that when car is loaded to full visible carrying capacity, actual weight will govern. This applies on stone, rough, undressed not further finished. Not subject to X-162-6-8 increases.

TRUNK LINE TERRITORY RAILROADS

Freight Traffic Committee

Bulletin N 4613-3 (Shipper)—Proposed to establish rate of $21.50 per car on primary crusher run stone, bulk, in open-top cars, from Wanaque-Midvale, N. J., to Montclair Heights, N. J. Rate not subject to ExParte 175-B increase.

Bulletin N 4513-2 (Carrier)—Proposed to establish rate of $4.75 per net ton on lime, fluxing, having no commercial value for chemical or building purposes, carload, minimum weight 35 tons, from Kimballton, Va., to Sparrows Point, Md. Rate subject to ExParte 175-B increase.

Bulletin N 4609 M-3 (Carrier)—Proposed to establish rate of $1.65 per net ton on limestone, natural, ground or pulverized, in open-top cars, not protected by tarpaulin or other protective coverings, as shown in D. L. & W. ICC 24504, taking Column A under Commodity Group 1, minimum 30 tons, from Lime Ridge, Pa., to Coxton, Pa. Rate not subject to ExParte 175-B increase.

Bulletin N 4513-M-1—Proposed to issue rate of $4.05 per net ton to meet motor truck competition on lime, common, hydrated, quick and slaked, in straight or mixed carloads, minimum weight 25 tons, except that when in bulk the minimum will be 50 tons, or when car is loaded to full cubical or visible capacity, in which case actual weight will apply, but not less than 35 tons, from Bellefonte, Pleasant Gap, and Chemical, Pa., to Johnsonburg, Pa. Rate not subject to ExParte 175-B increase.

Bulletin N 4609 M (Shipper)—In order to meet truck competition the West Maryland Railroad proposes to publish local rate of 50 cents per net ton on limestone, natural, ground or pulverized, in bulk, in open-top cars not protected by tarpaulin or other protective coverings, from Bowden, W. Va., to Wood, W. Va., minimum weight 90 percent of marked capacity of car used. Rate subject to 175-B increase.

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VIBRATORY FEEDERS PROVIDE

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- **INSTANT CONTROL** of rate of flow from pounds to hundreds of tons per hour.
- **EFFICIENT,** low cost operation—due to electromagnetic vibratory principle — using no motors, gears, belts, sprockets, etc.
- **FLEXIBILITY** in handling most bulk materials —hot or cold, dry or damp, fine or coarse.
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- **A VARIETY** of sizes and styles—light tonnage feeders with capacities from one to ten tons per hour—or heavy tonnage feeders with capacities up to hundreds of tons per hour—with flat pan, tubular, grizzly, screening and many other types of troughs.
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- PROVIDES MAXIMUM DRIVING TORQUE
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- EASIER MOUNTING OR DISMOUNTING
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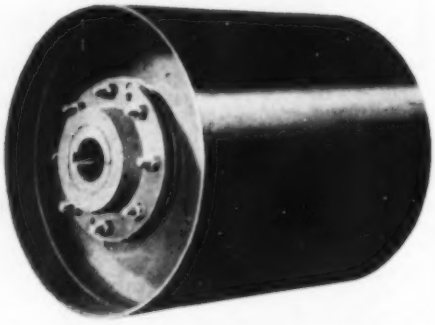

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Mounted with Friction-Drive compression-type hubs, these pulleys are designed and built for continuous service under all load conditions.

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Bulletin N 4610-8 (Shipper)—Proposed to establish rate of $2.43 per net ton on sand, except sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand and gravel, in open-top cars, without tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, from Glenside, Pa., to Frederick, Md. Subject to ExParte 175-B.

WESTERN TRUNK LINE COMMITTEE

Docket E-41-1955 (S)—It is proposed to establish on limestone, agricultural (soil treatment only) on shipments moving in open-top cars not protected by tarpaulin or other protective covering from Linwood, Iowa, to Richland, Iowa, $1.00 per net ton. Not subject to ExParte 175-B.

Docket E-41-1959 (S)—Proposed to establish on stone, rubble, or rough broken, from Crossville, Tenn., to Duluth, Minn., and Superior, Wis., in open-top cars without a protective covering, 823 cents; in closed cars or cars with a protective covering, 872 cents. Subject to X-175-B increases.

Docket E-41-1962 (S)—It is proposed to establish rate of 778 cents per net ton on perlite rock, broken, crushed, or ground, dried or not dried, from Antonito, Del Norte, and South Fork, Colo., to Rapid City, S. D. Rate subject to ExParte 175-B increase.

Docket X-E-41-1968 (S)—Proposed to establish rates in cents per net ton, carload, to C. B. & Q. Nebraska destinations on stone, broken, or crushed.

Station	Proposed Rate
Kearney	330
St. Michael	308
Grand Island	322
Litchfield	297
Natick	262
Seneca	257
Mullen	251
Marsland	205
Moorefield	298
Linscott, Grainton	274
Ashby, Rutland	211
Birdsell, Berea	188
Whitman	232
Hyannis	216
Ellsworth	200
Antioch	194
Joder	245
Wallace	286
Brandon	265

About rates are subject to X-175-B increase.

Docket E-41-1970 (s)—Proposed to establish rates on ganister, ground, carload, from East Chicago, Ind., to Eau Claire, Wis., open cars, 367, closed cars, no change; Hancock, Mich., 427, closed cars, no change. Rates subject to X-175-B increase.

trade notes

Jean Comte, former superintendent of Vallemi Cement Co., at Asuncion and Cia., Cementera, Argentina, has joined the sales-engineering staff of Kennedy-Van Saun Mfg. & Eng. Corp., with present headquarters in Manila, P. I. Well-known in South America, Mr. Comte has served in the mechanical and production departments of several leading companies as engineer and general manager.

Jean Comte

H. R. Powers

H. R. Powers, former domestic sales manager of the Le Tourneau-Westinghouse Co., Peoria, Ill., has been named general manager of Koehring Co. of California, Stockton, Calif., subsidiary of Koehring Co., Milwaukee, Wis. He will be in charge of all operations at the West Coast subsidiary, which services Koehring equipment for users in the western states and also manufactures some parts.

Herschel V. Hiatt, formerly assistant chief engineer for the Allison Division of General Motors Corp., has been named director of engineering for the Milwaukee Division of LeRoi Co., Milwaukee, Wis., a subsidiary of Westinghouse Air Brake Co. He will also be chairman of the product development committee, and will be responsible for the engineering department's recruitment and educational policies.

J. A. Keogh, vice-president and comptroller of Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has retired from active service. He is succeeded as comptroller by T. D. Lyons. Mr. Keogh joined Allis-Chalmers in 1904 as an accountant.

Donald E. Lutz, former representative in the Dallas, Tex., territory for Bucyrus-Erie Co., South Milwaukee, Wis., has been appointed sales representative for Bucyrus-Erie excavators in the western sales district, with headquarters in the San Francisco, Calif., office. He joined the company in 1947.

Bruce Smith, assistant service manager, central sales division for Caterpillar Tractor Co., is a member of a six-man team of government and industry experts on a tour of three United States defense bases.

John J. DeRisio, chief of the equipment branch of the Army Engineers' east ocean division at Richmond, Va., will lead the group in a study of maintenance problems and improvements on some of the $25,000,000 construction equipment controlled by the division.

In addition to Mr. DeRisio and Mr. Smith, the study group will include Neil Harrington, of the Engineers' Atlantic District; James P. Kay of the Euclid Division, General Motors Corp., Cleveland, Ohio; Ralph M. Holder of Barber-Greene Co., Aurora, Ill.; and James H. Rucker of the Le-Tourneau-Westinghouse Co., Peoria, Ill.

Bruce Smith

Thomas J. Hunter

Thomas J. Hunter, formerly business editor of the Lima *News*, has been appointed manager of the newly-created sales promotion department at the Lima Works, Baldwin-Lima-Hamilton Corp., Lima, Ohio. He will handle trade publication and newspaper publicity and sales aid material, edit a semi-monthly field paper, and direct activities of the company's new sales training school.

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Improve your Product?
Lower your cost?
We are AXLE men . . . United's specialization in the axle field gives you the benefit of job-engineered endurance, safety, and long life . . . at lower cost.
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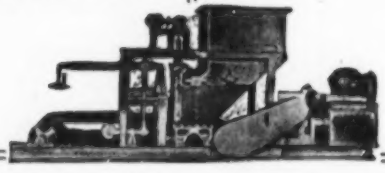

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The Poidometer is easy to operate, sturdily built, and provides maximum service life with minimum upkeep and labor costs.

Available with total weight recorders, and remote controls for showing and changing feed rate.

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SCHAFFER POIDOMETER CO., 2828 Smallman St., Pittsburgh 22, Pa.

Sintering Machinery Corp., Netcong, N. J., has announced the formation of a new division to devote its efforts to the design, construction, and sale of lightweight aggregate sintering plants and related process equipment. Operating as Dwight-Lloyd, Inc., the new company takes its name from the inventors of the sintering process, who also founded Sintering Machinery Corp.

T. A. Printon, president of Nopco Chemical Co., Harrison, N. J., has announced the recent appointment of Richard F. Spain as Midwestern district sales manager. From Nopco's Chicago office, Mr. Spain will be in charge of technical liaison and chemical sales.

A company employee since 1941, Mr. Spain is well acquainted with many of the technical problems in this area through his work as a chemist in Nopco's control and sales service laboratories and, for the last eight years, as a member of the sales force in Illinois and Iowa. His new duties include heading Nopco personnel in 12 Midwestern states.

Richard F. Spain

Keith J. Evans

Joseph T. Ryerson & Son, Inc., Chicago, Ill., well known national steel service organization, has announced the following appointments in its marketing and public relations divisions, which have their headquarters in Chicago:

Keith J. Evans, for many years advertising and sales promotion manager in charge of market research, sales analysis, sales promotion, advertising, and public relations, has been appointed director of marketing and public relations. He continues in charge of the five divisions. Mr. Evans has been associated with Ryerson since 1912, and has been manager of the advertising department since 1917. He was the founder and first president of the National Industrial Advertisers association, organized in 1922.

Lowell M. Bennett, formerly in charge of sales promotion, was appointed advertising and sales promotion manager.

H. K. Porter Co., Inc., Pittsburgh, Pa., has announced plans to acquire The McLain Fire Brick Co., a manufacturer of refractory fire brick, sleeves, nozzles, runners, and hot tops for use in steel plants and metal refineries. McLain operates six plants in Pennsylvania and Ohio.

Operations will continue as the McLain Fire Brick Co., a division of H. K. Porter Co., Inc., under the direction of W. A. Turner, vice-president and general manager.

John R. Ryan, former technical assistant in the Explosives Department of Hercules Powder Co., Wilmington, Del., has been appointed manager of explosives operations.

Edward L. Ramer, who joined Hercules in 1935 as an engineer, has been named manager of detonator operations.

Joy Manufacturing Co., Pittsburgh, Pa., has opened a new district office at 2410 Terminal Tower, Cleveland, Ohio. Howard E. Butters, formerly district manager in St. Louis, Mo., has been named district manager at the new office.

The International Harvester Co., Chicago, Ill., has opened a new motor truck district sales office in Lubbock, Texas. R. H. White, formerly motor truck district sales manager at Tulsa, Okla., has been appointed manager of the Lubbock office. He will be assisted by M. S. Howard, former assistant manager of the Sweetwater district sales office.

The E. J. Longyear Co., Minneapolis, Minn., announces several new appointments of domestic representatives.

Western Machinery Co. of Spokane, Wash., will represent Longyear in Idaho, eastern Washington, and western Montana. Ed Oman of WEMCO will handle Longyear products and services in that area.

Western Machinery Co. of Denver, Colo., will represent Longyear in Colorado, with George Setter as agent.

Ramsey-Eddy Manufacturing Co. of Tulsa, Okla., will represent Longyear in Kansas and Oklahoma, with Bo Bardsley as agent.

Longyear also announces the formation of a French company—Longyear et Cie.—with headquarters in Paris, France. G. E. Pouquet will manage the office, and will handle the distribution of diamond products manufactured by the Paris factory of Christensen Diamond Products, Inc., of Salt Lake City, Utah

Hyster Company, Portland, Oreg., has appointed the following three men to fill sales positions throughout the eastern United States:

Jack Wright, recently northern district manager on the West Coast, takes over as district manager of the northwestern district operating out of Chicago.

James Rector, who has been manager of the Hyster store in Chicago, moves to Atlanta, Ga., as district manager of the southeastern territory.

Robert Hile, with Hyster since 1946, becomes manager of the Hyster retail store in Chicago.

International Selling Corp. of New York has been appointed exclusive distributor of the Bamfords slow-speed diesel engines in the United States, Canada and Mexico by Bamfords, Ltd., of Uttoxeter, England. Plans are now being made by International Selling Corp. for extensive territorial distribution utilizing established diesel sales and service agencies.

J. Paul Mechler has been appointed manager of the Machinery Division of the Charles Dreifus Co., Philadelphia, Pa.

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WOVEN WIRE SCREENS
ACCURATE • DEPENDABLE • AVAILABLE FOR IMMEDIATE DELIVERY
Simplicity woven wire screens are accurately woven from high grade wire into strong, tough industrial cloth. Edges can be formed and banded to fit any type of equipment used for virtually every sizing, separating or screening operation. These screens are specifically designed and woven to give long dependable service and accurate sizing of all aggregates including limestone, gravel, sand, ore, clay and cinders. Simplicity screens in a choice of wire gauges and a wide range of openings are available for immediate delivery from large stocks in our warehouses. For further information, consult a Simplicity sales representative or write for Catalog No. 66.
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LOW INITIAL COST
LOW OPERATING COST
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Learn how these (and many other) features can boost ton-mile profits

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VARIABLE RATE SPRINGS

Flat-leaf, progressive springing means empty vehicle gets smooth, resilient ride. Maximum payloads get full, graduated suspension. Load and body damage goes down, ton-mile profits go up.

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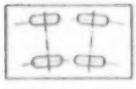

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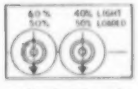

On trailing and pusher axles TandemTrac puts 60% of the load on the drive axle for empty-truck traction, splits full legal payloads 50-50, automatically. Trailers or dual drives get constant 50-50 ratio.

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Gentlemen:
Please send literature describing the new Tandem-Trac Suspension.

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Howard F. Barrows, research director for the Austin-Western Co., Aurora, Ill., was made an honorary member of the Soil Conservation Society of America at the society's national convention in Colorado Springs, Colo.

In his capacity as research director for Austin-Western, he has been investigating the ways in which heavy earth-moving equipment can be most efficiently and effectively used in conservation work. Mr. Barrows is a veteran of over 40 years with the Austin-Western organization.

Howard F. Barrows

W. H. Van Buren

W. H. Van Buren, former manager of Belting Sales, has been appointed assistant general sales manager, eastern division branches, for the Quaker Rubber Corp., a division of H. K. Porter Co., Inc., Philadelphia, Pa.

F. H. Ludington Jr., assistant vice-president of Chase Bag Co., Chicago, Ill., was recently elected vice-president. He joined Chase in 1946.

William N. Brock, general sales manager, becomes vice-president and general sales manager. He started with the company as a salesman in 1934.

A. H. Nuhn, assistant treasurer since 1939, was also named a vice-president; and M. J. Bender, former assistant secretary, was elected secretary. Both Mr. Nuhn and Mr. Bender started with the company in 1925.

Also announced was the appointment of Donald William Dougias of Stockton, Calif., as a salesman. He will represent the company in the Stockton area and in Nevada.

Richard H. DeMott, chairman of the board and president of SKF Industries, Inc., of Philadelphia, Pa., has been chosen to receive the Stevens Honor Award, bestowed each year by Stevens Institute of Technology on outstanding figures in American life. Mr. DeMott, who was graduated from Stevens in 1908, has been president of SKF Industries, Inc., since 1950 and chairman of the board since 1951.

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"Vibrating"
TEST SIEVE SHAKERS

Eliminate all Guesswork

Provide definite sizing of test samples

- Use standard 8" Screen Scale Testing Sieves
- A reset timer for accurately timed test periods
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Ruggles-Coles . . .

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Write for Bulletin 16-D-8

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New York · Toronto · Chicago · Hibbing · Houston · Salt Lake City · San Francisco

W. D. Lease, formerly in charge of research and development for Athey Products Corp., Chicago, Ill., has been appointed to the newly-created position of manager of sales promotion. He will direct the activities of advertising, sales development, and sales training.

John A. Polhemus and Charles B. Pace have been named district representatives in the Middle Atlantic States for the Euclid Division, General Motors Corp., Cleveland, Ohio. They are dividing the territory handled for 20 years by William F. Myer, who is assisting them in their new assignments and remains with Euclid as a consultant.

S. H. Smith, district manager of the Milwaukee, Wis., office of Air Reduction Sales Co., New York, has retired under the company's mandatory retirement plan after 38 years of service. He is succeeded in Milwaukee by G. J. Dekker, former district manager in St. Louis, Mo. Mr. Dekker has been with Air Reduction for 35 years.

Philip Terry has been appointed the new eastern district manager for Highway Equipment Co., Inc., Cedar Rapids, Iowa. His headquarters are in Carlisle, Pa.

Philip Terry

J. E. Heuser

J. E. Heuser, Engine Division sales manager of the Le Roi Co., subsidiary of Westinghouse Air Brake Co., Milwaukee, Wis., has been elected president of the Internal Combustion Engine Institute, an organization composed of major manufacturers of high-speed gasoline and diesel engines.

B. G. VanZee, chief engineer, Minneapolis-Moline Co., Minneapolis, Minn., was elected vice-president; H. W. Smith, consulting engineer, Engine Division, Caterpillar Tractor Co., Peoria, Ill., secretary; and J. D. Cook, secretary-treasurer of Hercules Motor Corp., Canton, Ohio, treasurer.

To producers of sand and gravel, rare earths, and other mineral products

Combine digging and made-to-order processing plant aboard a YUBA dredge

This Yuba dredge (4000-ton displacement) digs 112 ft. below water with 18 cu. ft. buckets; has ample deck space for processing machinery.

Dredging costs under 5¢ per ton for gravel are not uncommon with large YUBA bucket ladder dredges. They also have dug cemented gravel, boulders, and into bedrock without costly drilling and blasting. They float in their own ponds, excavate without lowering surrounding water levels. Bucket sizes range from 2½ to 18 cu. ft. . . . digging depths from 10 ft. or less to 125 ft. below water.

Complete Plant Afloat

Your YUBA dredge can be built to screen out rocks; to break up and wash away surplus clay; to size through single or multiple screens; to remove mineral products by jigs, cones or magnetic separators. In short, you can completely process and grade your product as you dig, all aboard a YUBA dredge.

Choice of Handling Methods

Your dredge can be designed to stockpile ashore, load into trucks or shore conveyor; load into barges; or pump ashore through pipes.

Consult YUBA NOW. We can build you a new dredge . . . redesign, move and rebuild a used dredge . . . to fit your particular needs. Wire, write or call us — no obligation of course.

67

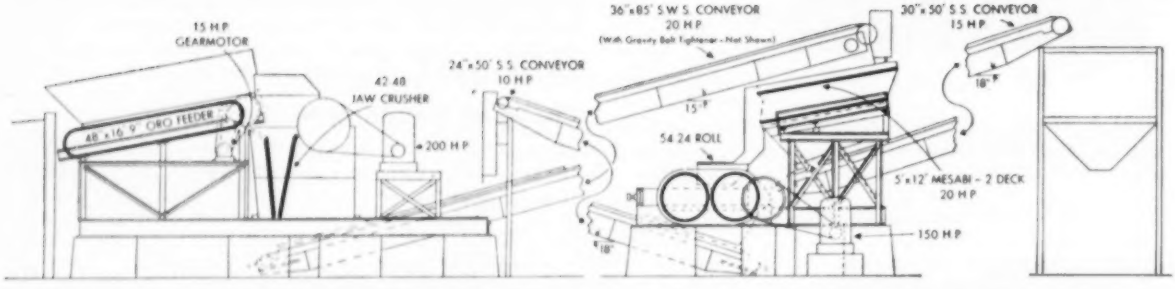
YUBA DREDGES — PROVED DEPENDABILITY

YUBA MANUFACTURING CO.

Room 718, 351 California St., San Francisco 4, California, U. S. A.

AGENTS { BIBBY, DARBY & CO., LTD. · SINGAPORE, KUALA LUMPUR, PENANG.
SHAW DARBY & CO., LTD., 14 & 19 LEADENHALL ST., LONDON, E. C. 3.

CABLES: YUBAMAN, SAN FRANCISCO · SHAWDARBCO, LONDON



EXTRA BIG EQUIPMENT SPEEDS WORK ON WEST VIRGINIA TURNPIKE JOB

In the mountain country of West Virginia, big contractors anticipating turnpike jobs are watching closely the rapid progress being made on the new West Virginia turnpike. And the center of attraction is a high capacity, low cost rock crushing plant near Cabin Creek which is preparing 575,000 tons of 3" minus material with a minimum of 15 percent fines for the base course and paving on 20 miles of the new super-highway.

This crushing plant is owned by the Frank Mashuda Co., Gallagher and Nelson, and the Arthur Overgaard Co.

Crushing 450 Tons Per Hour

The plant operates as Tyler Breslin Quarries of Charleston, West Virginia and is producing specification material from hard sandstone at the rate of 450 tons-per-hour with 100 percent crushing.

Heart of the plant is the world's largest overhead eccentric jaw crusher, a PIONEER 4248 with 4 cubic yard crushing chamber. Equipped with self-aligning roller bearings and hydraulic adjusting mechanism, it represents the modern trend in crusher design.

Crusher base is split horizontally for easier handling, and hydraulic pressure grooves in the shaft under the bearing races, make it possible to remove bearings with fingertips. Moving and stationary jaws are in sections which can be

reversed for longer manganese wear.

Double wall, box type construction gives the base added strength and makes it possible to keep total weight of crusher under 95,000 lbs.

The giant crusher is supplied by a 48" x 16" PIONEER ORO feeder equipped with massive 5/8" thick cast manganese steel pans which take the huge loads dumped by the quarry trucks. The feeder pans have integrally cast links and are driven by manganese steel sprockets with renewable teeth.

Both units (crusher and feeder), along with motor mounting, are joined in a single primary plant mounted on 21" I-beam skids set on a reinforced concrete foundation.

Secondary Unit Has Big Roll Crusher

Completing the all-PIONEER installation is a secondary plant consisting of a 54" x 24" roll crusher with one smooth and one corrugated shell, and a 5' x 12' Mesabi-type 2-deck gradation screen.

Support for the Mesabi screen, an extra heavy duty unit designed specifically for rugged jobs, is furnished by an extension of the roll crusher base. Three PIONEER conveyors totaling 185' in length and a storage bin complete the plant.

In operation, material from the primary plant that passes the bottom deck is conveyed directly to the storage bin; oversize from both decks is returned to the roll crusher for further reduction.

Pioneer Helps Select Plant Site

The high-producing Tyler Breslin Quarries turnpike plant shown above was designed by a PIONEER field engineer in close collaboration with the purchaser and his equipment dealer.

This engineer surveyed the site, studied the material and specifications, analyzed the problem, then furnished the details to PIONEER'S engineering department which developed the plan shown at the left.

Complete erection prints were provided, and experienced PIONEER assistance was given in the erection of the plant.

But PIONEER'S responsibility didn't end when the plant when into operation. Though PIONEER equipment is recognized in the industry as requiring a minimum of upkeep, an alert, world-wide distributor service organization and factory-trained maintenance men are available whenever quick service is needed.

The Pioneer Edge In Action

Couple this service with the creative engineering that has accounted for an impressive list of "firsts" in the design and building of aggregates producing equipment, and you have a combination that's hard to beat. Operators who have seen the performance of PIONEER equipment in the field . . . call it the PIONEER EDGE.

For further details on the turnpike plant and other PIONEER high output, low upkeep crushing and screening installations, write Pioneer Engineering Works, Inc., Minneapolis, Minnesota (subsidiary of Poor & Co., Chicago).

Pioneer
Continuflo EQUIPMENT

INSIDE and OUT...

The Allis-Chalmers HD-15 now offers a choice of two outstanding drives — standard transmission with time-saving shift pattern, or optional hydraulic torque converter drive.

Allis-Chalmers is your BEST tractor buy

Allis-Chalmers tractors are truly modern — new from the ground up, without compromise anywhere in design or material. Built to meet today's demands, users find them more productive, more reliable, easier to operate.

Just check the advantages they offer you: — 1,000-*hour lubrication periods* on truck wheels, idlers, support rollers . . . *all-steel, one-piece welded main frame* that offers longer tractor life . . . *A-type truck frames* pivot to permit free track oscillation . . . *double reduction final drives* with more clearance and shorter shafts that resist deflection . . . *unit construction* for quick, easy disassembly . . . *lubrication points easily accessible* . . . *easy operating controls.* Add 'em up, you'll know why — Allis-Chalmers tractors are your best buy.

MODEL	HP.	WT.
HD-20	175 net engine*	41,000 lb.
HD-15	109 drawbar	27,850 lb.
HD-15	135 net engine*	28,300 lb
HD-9	72 drawbar	18,800 lb.
HD-5	40 drawbar	10,500 lb.

*with hydraulic torque converter drive

Ask your Allis-Chalmers dealer to show you these tractors at work. Let him demonstrate how this modern design out-performs under actual job conditions.

ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

40 PAGES of helpful information

on Recovering Dusts, Fly Ash, Mists, Fumes and other Suspensions from Gases.

This booklet summarizes
the important points design and plant engineers should know about Cottrell Precipitators . . .

- Basic types of Cottrell equipment.
- Principal elements in a Cottrell unit.
- Data on Mechanical and Electronic Rectifiers.
- Various types of Collecting Electrodes (rod curtains, corrugated plates, pocket electrodes, etc.).
- Typical ways of removing collected material.
- Various Shell Constructions (steel, concrete, brick, etc.).
- The effect of various factors on efficiency and performance.
- Data on CMP (Combination Multiclone-Precipitator) Units.

. . . and many other helpful facts on Cottrell design and operation.

Latest data from Western Precipitation on Cottrell Recovery Equipment

Do you have operations in your plant where gas-laden suspensions, wet or dry, are a problem? Such suspensions may be dropping on surrounding property, causing nuisance difficulties. Or perhaps important values are being lost in stack gases that can be profitably recovered. Whatever the nature of your recovery requirements, you will find this 40-page Cottrell booklet of great help. It contains up-to-date data on the latest advancements in the electrical precipitation field – prepared by the organization that pioneered the commercial application of Cottrell Electrical Precipitators almost a half century ago and has consistently led in new Cottrell developments.

A copy of this data-packed booklet will be sent free to engineers and other executives interested in recovery processes. Send your request to our nearest office.

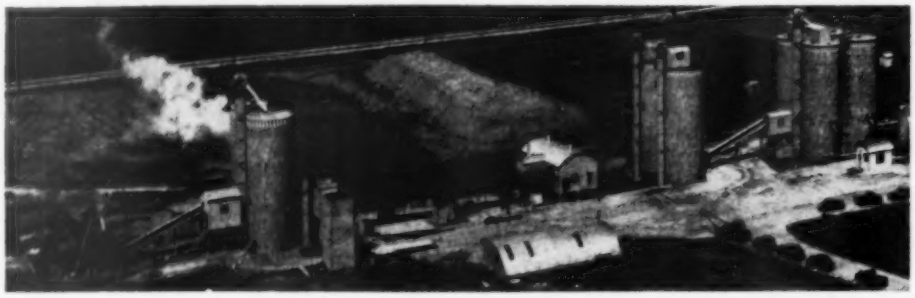
For nearly 50 years Western Precipitation has carried on a continuous research and development program on Cottrell Electrical Precipitators, Multiclone Mechanical Collectors and other types of recovery equipment. We are not affiliated with any other company in the electrical precipitation field except our wholly owned subsidiaries, International Precipitation Corporation and the Precipitation Company of Canada, Ltd. We are equipped to serve you anywhere in the United States, Canada, and throughout the world!

WESTERN Precipitation CORPORATION

DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. La SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

CONSULTANTS and DESIGNERS of LIGHT WEIGHT AGGREGATE PLANTS



Buildex, Inc., Plant, Ottawa, Kansas

- Kilns
- Coolers
- Dryers
- Crushers
- Conveyors
- Scales
- Screens
- Hoppers
- Brick Yard Equipment
- Semi-Drop Bottom Trailers

Since 1881 The Webb Corporation has been designers and builders of heavy industrial equipment. We are located in the "Heart of America." Our plant is ably staffed with consulting engineers for your various problems. Complete facilities for machining and fabricating of the products listed enable us to give prompt service on all inquiries.

A staff of service engineers is employed to give complete field service when required.

THE WEBB CORP., WEBB CITY, MISSOURI, U.S.A.

Write for complete information

We are manufacturers of Plate Fabricating Machinery • Truck and Trailer Wheels • Mining Machinery • Railroad, Motor Truck and Industrial Scales • Products for Coal, Mining, Lead and Zinc • Smelters • Brick and Cement Plants • Rock Quarries

Why "breathing space" between each wire?

To increase flexibility . . . a tiny, precise amount of "breathing space" has been engineered between each of the 265 wires in this Monarch Whyte Strand wire rope.

And to guard against corrosion and friction . . . special Macwhyte *Internal Lubrication* is force-fed around each wire before fabrication.

Macwhyte makes a thousand and one ropes to meet the needs of every type of equipment. Each is built with the exacting care that long, low-cost service demands.

Prompt recommendations on request.

GET THE RIGHT ROPE FOR YOUR QUARRY EQUIPMENT

Macwhyte 6 x 41 Filler Wire PREformed Lang Lay Monarch Whyte Strand with IWRC

MACWHYTE WIRE ROPE

MACWHYTE COMPANY
2987 Fourteenth Avenue, Kenosha, Wis.
Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.
Ask for G-15 Wire Rope Handbook

April 1954

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

New change house at the Riverside Cement Company's Ono Grande (Calif.) plant illustrates many concrete construction techniques. For additional details see page 192.

CONVENTION REPORTS ISSUE

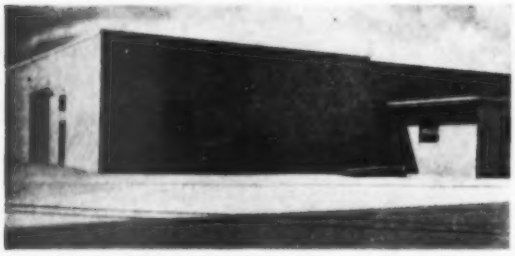
Contents

- Editorial — Civil Defense Plan 169
- News of the Concrete Industries 171
- Convention Reports:
  - National Ready Mixed Concrete Assn. 178
  - American Concrete Institute 183
  - American Concrete Pipe Assn. 185
  - Autoclave Building Products Assn. 188
- Compression Testing for Profit 191
- Unusual Techniques Featured in Change House 192
- New Machinery & Supplies 196
- Trade Literature 197

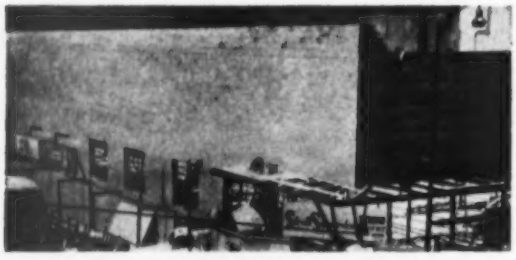
CONCRETE-BLOCK MANUFACTURER SAYS:

"Our repeat sales tell the story of better blocks made with Duraplastic*"

Lima Cement Products Company workman lifts three green concrete blocks made with Duraplastic from machine.



HERE is Standard Oil of Ohio's bulk storage building at Lima. Duraplastic block from Lima Cement Products Company was specified by sub-contractor for masonry Floyd Stemen, Lima, Ohio.



HERE, TOO, Stemen chose Duraplastic-made block from the Lima Cement Products Company. This is the new Kresge store on the main street of Lima.

"We've found that uniformity and high strength of concrete blocks are two big factors in getting repeat orders," says Bill Ebling, vice-president, Lima Cement Products Co., Lima, Ohio. "During the last seven years we've depended on Duraplastic air-entraining cement to help us build these qualities into our product."

More and more manufacturers are discovering the repeat sales appeal of concrete products made with Duraplastic...the economy this cement offers in production and handling. Mixes are rubbery and cohesive, feed easily through machines and produce concrete highly resistant to the passage of water.

YET DURAPLASTIC COSTS NO MORE

It sells at the same price as regular cement and requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

NIFTY SAYS: The appearance of Duraplastic-made products works for you as a built-in salesman. Customers go for the clean, true edges and the richer face texture—especially when harsh aggregates are used.

THRIFTY SAYS: Build up profits and cut down production costs with Duraplastic. Manufacturers find less breakage in handling green machine-made products . . . fewer costly culls and throwbacks.

OFFICES: Albany • Birmingham • Boston • Chicago
Dayton • Kansas City • Minneapolis • New York
Philadelphia • Pittsburgh • St. Louis • Waco

*"*Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.*

CM-D-156

ATLAS®

DURAPLASTIC

AIR-ENTRAINING PORTLAND CEMENT

Makes Superior Concrete Products at No Extra Cost

UNITED STATES STEEL HOUR—Televised alternate weeks—See your newspaper for time and station.

Civil Defense Plan

IN A TALK delivered before the recent annual convention of the National Ready Mixed Concrete Association at Chicago, Lieutenant-General Henry L. Larsen pointed out that in the event of a surprise air assault this country would stand little chance of stopping more than 30 percent of the attacking planes. He was speaking before an open forum on civil defense problems, and he drew the conclusion that the 70 percent of the attacking force which penetrated our defenses would make Pearl Harbor look like a Sunday-school picnic.

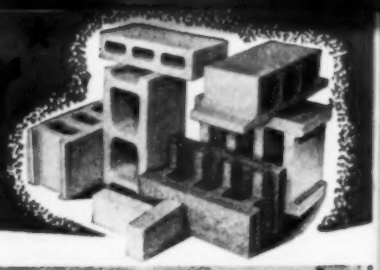
Experience in the last war indicates that perhaps four-fifths of the destruction achieved by such an attack would be the result of fire. This seems a conservative enough prediction in view of the fact that most of our cities are more than 90 percent combustible. General Larsen believes that the 16,000 organized fire departments in this country are hopelessly inadequate to cope with the widespread fires which would be caused by a mass air attack, but he has advanced a definite suggestion for supplementary effort that might well spell the difference between victory and defeat.

He proposes that ready-mixed-concrete producers in each community be made an integral part of civil defense fire service. In support of his suggestion he points out that ready-mix firms generally have their own water supply; that they have heavy rolling equipment capable of transporting impressive quantities of water and/or chemical mixtures to the scene of the fires; and that their forces are by nature mobile and likely to be dispersed outside areas of maximum destruction.

It seems doubtful indeed if many Americans have more than a dim awareness of the threat that looms over our nation. Two centuries of comparative security behind barriers provided by the oceans and the polar ice caps have afflicted us with a Maginot Line mentality as acute and dangerous as that which lulled the French nation to sleep on the eve of World War II. General Larsen has pointed out a means by which an important branch of the concrete industries may strike a telling blow against complacency. We hope that the entire ready-mix industry will be as quick and as forthright in implementing his proposal as was the National Ready Mixed Concrete Association in endorsing it.

William M. Avery

Another BESSER Booster*



★ This is the 108th of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

(Right) Fleet of motor trucks used by Angelus Block Company for delivering Vibrapac Block to customers in the San Fernando Valley.

(Above) Filippo Fordellone, Vice President, Edward Antonini, President and Thomas M. Jamieson, General Manager of Angelus Block Company.

Two AUTOMATIC VIBRAPACS in Burbank, California Products Plant Enable Firm to Increase Sales by 400%

Angelus Concrete Block Company, Burbank, California, operates the largest and most modern concrete and cinder block plant in the San Fernando Valley. The company installed their first Besser Automatic Vibrapac in 1947. Since then, they have added another Automatic Vibrapac and a third Vibrapac will be installed this year. When Edward Antonini, President, was asked why Vibrapacs were selected, he said, "We chose these machines because they give us precision masonry units at mass production with a minimum of downtime".

The successful operation of these Automatic Vibrapacs is reflected in the fact the company today produces and sells 500,000 masonry units (8" or equivalent) per month. Company literature states: "Angelus Block are incomparably superior to any made so far, anywhere. They become, in effect, a new building material, rich in outstanding advantages". Perhaps this explains why the Angelus Company was able to increase block sales during the past six years by more than 400%.

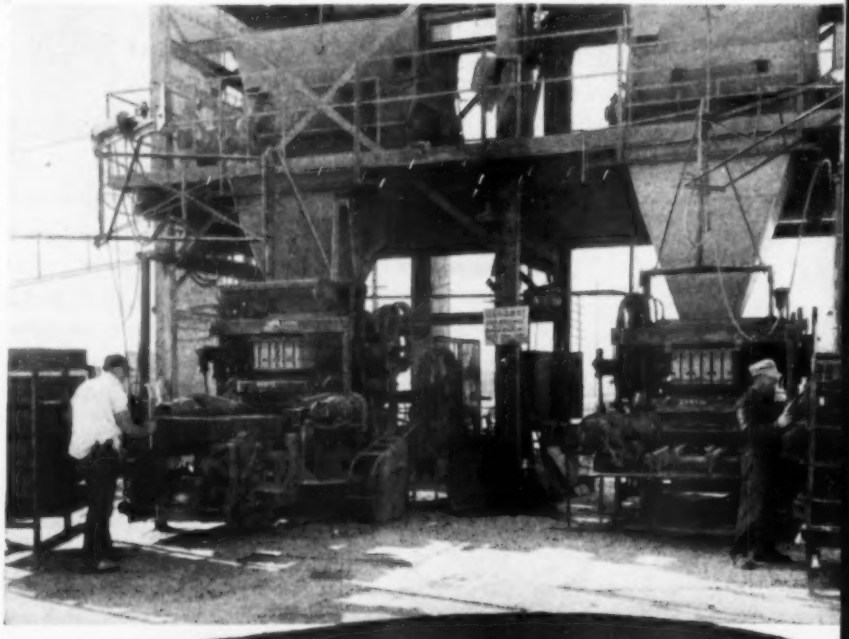
BESSER MANUFACTURING CO., Box 131, Alpena, Mich., U. S. A.

Complete Equipment for Concrete Products Plants

(Above) Loading block with the aid of a lift truck. Many block plants are today cubing block by power. This eliminates the outmoded hand lifting of block and speeds up deliveries.

Automatic Vibrapacs in Modern "Open Air" Plant

Produce both lightweight and Concrete Masonry units in all types and sizes. Fully automatic. Each machine produces three 8" x 8" x 16" modular block on one Plain Pallet. Other sizes produced in equivalent multiples on the same set of Plain Pallets. No machine operator is required. Hand labor is reduced to pushing a switch button and guiding a power off-bearing hoist.



BESSER
50th Anniversary
1904-1954

A Half Century of Concrete Masonry Progress!

NEWS OF THE CONCRETE INDUSTRIES

Expanded Shale Institute Joins K-State Dept. In Research Project

Suitability of expanded shale aggregate for use in prestressed concrete construction will be studied by the Kansas State College department of applied mechanics under a research contract just signed by the Expanded Shale Institute with the K-State engineering experiment station.

Research on lightweight aggregate which has been carried on at K-State the past year for the Carter-Waters Corporation of Kansas City attracted the attention of the institute and led to the grant, according to C. H. Scholer, head of the K-State applied mechanics department.

Creep of concrete has been a problem with prestressed concrete using lightweight aggregate, and the K-State study will be used as a basis for determining standards for the whole industry. Dale R. Carver and Edwin R. Chubbuck of the applied mechanics department will conduct the research.

Reinhold Honored

Frederick W. Reinhold, president of Anchor Concrete Products, Inc., and past president of the National Concrete Masonry Association, has been awarded a certificate of merit by the American Cancer Society for his service to the cause of the fight against cancer. Under Mr. Reinhold's chairmanship in 1953, the New York State Division raised a record of $931,737.

Coming Events

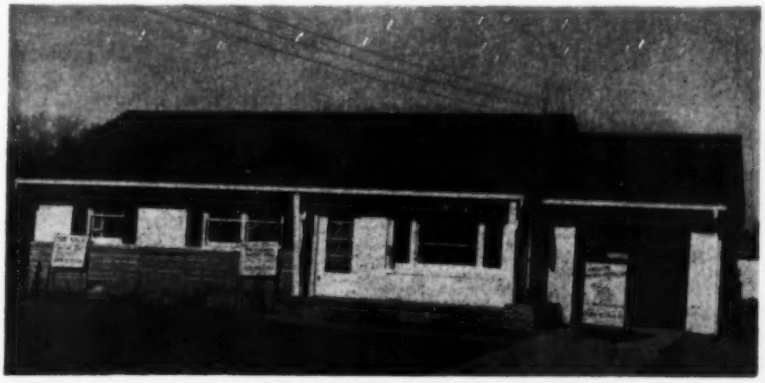
June 13-18, 1954—Chicago. Annual meeting, American Society for Testing Materials. Eleventh exhibit of testing and scientific apparatus and laboratory supplies and ninth technical photographic exhibit. Sherman and Morrison hotels.

June 20-27, 1954—Brussels, International congress of concrete products manufacturers.

Tests of Reinforced Lintels Described in New Report

Professor Herman E. Mayrose, University of Detroit, is the author of a report on the results of load tests in 24 lintels (or beams) constructed of reinforced concrete block masonry. These tests were conducted for the National Concrete Masonry Association in the engineering mechanics laboratory of the university.

Entitled *Tests of Reinforced Concrete Block Masonry Lintels,* the report describes the construction of the lintels, the testing procedure, and the performance of the units as to ultimate loads. Among the variables investigated were the type of block, lintel construction details, span length, reinforcing area, and type of core fill material. The booklet was published by the National Concrete Masonry Association.



● This is a picture of a three-bedroom home built and owned by John Blazona of Springfield, Mo., who states that he can erect a duplicate of the house for $9,640. The astonishingly low cost, Mr. Blazona explains, is due to the use of Haydite masonry units—8- by 8- by 16-in. in size—with horizontal joints square cut and vertical joints honed flush. These units are designed to produce the effect of wide siding. The contrasting section at the left is built of buff-colored split rock. Units used in this home were made by Stewart-Nattinger, Inc., a firm which operates plants in Springfield and Clinton, Mo.

Midwest R.M.C. Men Meet For 12th Convention— Name D. C. Hay President

Members of the Midwest Ready Mixed Concrete Association held their twelfth annual convention on March 15 and 16 at the Drake Hotel in Chicago. At the opening session Robert J. Hummel, president, welcomed the members to the convention. J. H. Banker, construction superintendent, Portland Cement Association, discussed handling, placing, and finishing concrete.

In the absence of Vincent P. Ahearn, who was ill, Phillip Sparling, First National Bank, Chicago, substituted with a talk on the timely subject of what a banker wants to know about a ready-mix producer. A question-and-answer period followed. Equipment manufacturers and producers of raw materials were hosts at a reception after this session, and the annual banquet followed.

During the morning session of the second day addresses were given by H. B. Neisz, farm field representative, Portland Cement Association, and Delmar Bloem, assistant director of engineering, National Ready Mixed Concrete Association and National Sand and Gravel Association. Mr. Neisz based his talk on the arresting query: "How many customers do you want" Mr. Bloem, substituting for Stanton Walker, N.R.M.C.A. and N.S.G.A. director of engineering, discussed problems of sampling, molding, handling, curing, and testing concrete specimens.

The fellowship luncheon was followed by the general business meeting, during which the annual election of officers took place. Results of the balloting were as follows: President, D. C. Hay, South Bend, Ind.; vice-president, L. L. Shidler, Kankakee, Ill.; secretary, R. E. Hutchins, Terre Haute, Ind.; treasurer, R. J. Jennings, Muncie, Ind. Newly elected directors are Herschel Moon, East Chicago, Ill.; E. G. Hurst, Benton, Ill.; and Jack O'Halloran, Spring Valley, Ill.

Prestress Book Available

J. R. Gilley, director, University of Toronto, Toronto, Ont., has announced that a book is now available containing papers presented at the Canadian Conference on Prestressed Concrete January 28 and 29 at the university. The book is available at $2.50 per copy upon application to Mr. Gilley.

COMMENT
from the
BUTLER ENGINEER

—A Plant ain't like a suit of clothes

When you buy a Roadbuilders Plant or a Ready Mixed Concrete Plant, you virtually take on the manufacturer as a partner. So it's just good sense to look long and hard at the manufacturer's past, present and probable future. You are investing not only in bins, batchers and conveying systems, but much more in allied equipment.

Yet the Plant itself is the heart! If the manufacturer lacks in engineering, construction know-how or knowledge of the practical operating problems in *your* field, the *heart* is less efficient, less competitive, less profitable. And to that degree you jeopardize your *entire* investment.

If you buy a suit of clothes and it doesn't fit, you can hand it on to a brother-in-law. A Plant is something else. You just have to live with it. Or try to.

Less than a half dozen manufacturers specialize in such Plants. All are good. They know your field, your production problems —and they have pre-engineered, experience-proved, standard components plus the ability to "dovetail" every detail to make the entire Plant a successful and profitable unit.

So, go to one of the small group who are tops in a highly complex job of manufacturing.

Naturally we hope it will be Butler. Butler offers engineering for *all* your problems. After all, engineering is the ability to put every dollar of your investment to the most efficient and productive use. *And that's what Butler does.*

Anyway, choose an expert for an expert's job.

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

Stephen Stepanian Honored In Resolution of Ohio R.M.C.A.

To implement the sentiments of appreciation held on Stephen Stepanian by the members of the Ohio Ready Mixed Concrete Association, the latter recently passed by unanimous vote a resolution to confer honorary life membership in the organization upon Mr. Stepanian and to make him the first honorary member of its board of directors.

Mr. Stepanian was hailed as the designer of the first ready-mix transit unit and as the first president (1938-1939) of the Ohio Ready Mixed Concrete Assn., as well as its treasurer from 1939 to 1953.

The resolution was read at the Ohio association's annual breakfast during the National Ready Mixed Concrete Association convention in Chicago. On the following day Mr. Stepanian was honored by N.R.M.C.A. at its joint luncheon with the National Sand and Gravel Association. (See page 178 in this issue for the complete convention report.)

National Home Week Dates Set for September 19-26

National Home Week will be celebrated on a coast-to-coast scale from September 19 to 26 inclusive, officers of the National Association of Home Builders have announced. According to R. G. Hughes, president, this event will be the largest ever conducted. Several thousand spic-and-span new homes, replete with new ideas, will be on display in all principal cities. Close to $100,000,000 worth of new homes will be displayed by N.A.H.B. members.

Fundamental purpose of National Home Week, Mr. Hughes said, is to illustrate the advantages of home ownership and to show the nation the latest ideas and methods in home building. Established by the N.A.H.B. in 1948, this event has become one of the biggest industry observances in the nation.

French Engineer's Book Covers Field of Prestressing

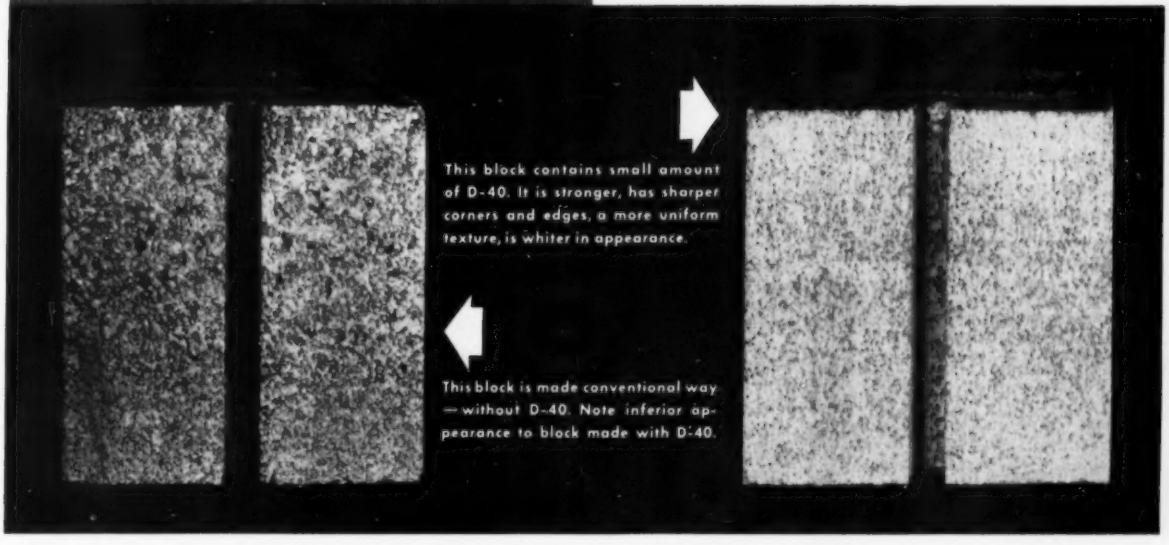
Prestressed Concrete, a recently published book by Yves Guyon, is unique in its exhaustive coverage of a specialized phase of the subject—the study of statically determinate straight beams. Featuring the Freyssinet system, it also deals with other methods of prestressing, both pretensioned and post-tensioned, all from the standpoint of theory and application.

Mr. Guyon's extensive treatment is in three major sections. The first section provides a general survey on methods and materials, friction, fire resistance, and anchorage. Elastic design is covered in the second major consideration, and the third division describes results of actual tests on simply-supported beams. Published by John Wiley & Sons, New York.

"Do you have any that will stay a little soft? My son is forever tumbling."

BETTER concrete blocks at lower operating costs

with low-cost D-40


This block contains small amount of D-40. It is stronger, has sharper corners and edges, a more uniform texture, is whiter in appearance.
This block is made conventional way —without D-40. Note inferior appearance to block made with D-40.

Reduced abrasive wear on mixing and molding equipment
Mixes pour into molds faster, "break" cleaner—saves time
Closer bonding—saves on painting and waterproofing

Let us show you how we have helped other concrete product manufacturers make superior blocks and at the same time reduce their operating costs.

Oronite's ready-to-use additive, D-40, is economical and easy to use. Only one to two ounces is needed per bag of cement. Just add to dry cement at the mixer.

For complete information, sample and technical help, write or call the Oronite office nearest you.

ORONITE CHEMICAL COMPANY

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30 Rockefeller Plaza, New York 20, N. Y. • 600 S. Michigan Ave., Chicago 5, Ill.
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Welded across Stretcher Rods, Cross Bars project for maximum anchorage in mortar. Cross Bars are welded over Stretcher Rods without annealing Stretcher Rods or impairing tensile strength.

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Cross Bars are galvanized for life-long durability but only that section which is exposed when Wal-Lok is used as a wall tie or as masonry wall reinforcing. Longitudinal Bars and portions of Cross Bars which are embedded in mortar are bare steel. —No sacrifice of Wal-Lok's amazing bonding qualities.

POSITIVE PROOF
Tests conducted by the Research Foundation of the University of Toledo offer positive proof of these statements. To our knowledge, Wal-Lok is the only masonry Wall reinforcing based on scientific research.

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Personal Mention

● Lock and Yager Win Promotions

Robert S. Lock has been promoted to the post of general sales manager for the Poston Brick and Concrete Products Company, Springfield, Ill., and Carl W. Yager Jr. has been named city and district salesman for the same firm.

● Weiss to Manage Zeidler Plant

Bob Weiss, who formerly was on the staff of the Lone Star Cement Corporation at Springfield, Mo., was recently appointed general manager of the Zeidler Concrete Pipe Company of Missouri, Inc., at Joplin. Zeidler turns out concrete block, precast items, reinforced concrete culvert, and sewer pipes. Mr. Weiss succeeds LeRoy Roper, who died in March last year.

● Alf Hjort District Manager at Portland

A promotion has made Alf Hjort, formerly resident manager at Portland, Oreg., the new district manager of the Raymond Concrete Pile Company in the Portland area. Mr. Hjort's office in Portland will handle sales, engineering, and construction.

● A. J. Braun Adds New Title

Alvin J. Braun, who was recently named secretary-treasurer of Atlas Ready-Mix, Inc., Bismarck, N. D., has been named plant manager as well. Atlas was founded last year by James Igoe and incorporated in January of this year.

● W. T. Young Gets Huron Post

William T. Young has been appointed manager of masonry cement sales for the Huron Portland Cement Company, Detroit, Mich., according to an announcement released by Clarence L. Laude, vice-president in charge of sales.

● Powell Elected St. Louis Assn. President

R. F. Powell, president of Concrete, Inc., has been named president of the St. Louis Material Dealers Association for 1954.

● Dickehut Becomes Texcrete Manager

Announcement of the appointment of H. H. Dickehut Sr. as general manager of the Texcrete Company of Corpus Christi, Tex., was made recently by Arthur J. Clark, vice-president of Texas Industries, Inc., parent company. He succeeds H. H. Dickehut Jr., who is moving to Albuquerque, N. M. Previous to joining Texcrete in 1952, Mr. Dickehut Sr. was vice-president of Acme Concrete Pipe Co., Inc.

● W. F. Curtiss Promoted by Universal

The promotion of William F. Curtiss to manager of the Columbus plant of Universal Concrete Pipe Company has been announced. Mr. Curtiss has been with Universal since 1945 and has served as office manager and acting manager at Columbus.

Allen Kissam, 65, Succumbs To Brief Illness in Orlando

Allen Kissam, 65, president of Kissam Builders' Supply Company and a resident of Orlando, Fla., for more than 50 years, died on February 14 at his home in Oak Island after an illness of a few weeks.

In 1922 Mr. Kissam and his late brother, Edward Kissam, established their building supply firm, Allen Kissam becoming president of the firm in 1952 upon the death of his brother.

Mr. Kissam was active in the development and manufacture of concrete blocks and held patents for machinery used in the manufacture of block. He also was an active member of the National Concrete Masonry Association for many years.

Midwest Concrete Exposition Presents Multi-Feature Show

Not one, not two, but dozens of featured displays were on exhibit at Chicago's Navy Pier on March 18, 19, and 20 when the Concrete Contractors Association of Greater Chicago put on its annual Midwest Concrete Exposition. Exhibits ranged in size from a concrete saw to a 10-ton crane. Movies showing several types of concrete construction and a series of field trips proved to be extremely popular.

Among the featured exhibits were precast concrete columns and joists, power wheelbarrows, power trowels, waterproofing materials, concrete roofing systems, vibrators, fly ash for use in concrete mixes, precast concrete structural systems, mixers, and various power tools.

Bert Carey, president of the sponsoring Concrete Contractors Assn., lauded the valuable research carried on by the American Concrete Institute, the Portland Cement Association, government agencies, and several universities in extending and improving concrete construction.

Rx Ready Mix

By Harry F. Thomson

Delay Not Necessarily A Death-Knell

One of the hurdles met by early producers of ready-mixed concrete was the misconception held by many—including leading architects, engineers, and contractors in each trade area—that concrete must be placed just as quickly after mixing as possible. And there was the further belief that any considerable delay between mixing and placing would quickly reduce the quality of the concrete to a point justifying rejections. A producer offering ready-mix would frequently be told, "I want my concrete placed immediately after mixing" or "I don't think concrete should be wheeled even across the street, and certainly it should not be hauled about the city for a half-hour or longer."

This widely-held fear of delay in placement had probably led to the inclusion in most specifications of a requirement that the concrete must be placed within 30 minutes after water had been added to the batch or after the cement had come in contact with damp aggregates. A more realistic attitude toward the interval between mixing and placing began to develop (about 1940) after the approval of the A.S.T.M. specification for ready-mix which recognizes as reasonable a lapse of 90 minutes under normal conditions, but suggested that some reduction in this time might be required for conditions such as hot weather, which might hasten the time of set.

Although this A.S.T.M. timing has been adopted widely in current specifications, it might be noted that shorter times are still named in many instances. In a recent compilation of state-highway specifications (released by the National Ready Mixed Concrete Association), five states are listed as permitting a limit of 30 minutes, and seven states as allowing only 45 minutes. In the specification for civil works of the Corps of Engineers, the allowed time is currently limited to 45 minutes, although until recently the limit was 30 minutes. Since many specifications do not permit the exercise of discretion on the part of the job inspector, the practice of naming such short intervals and providing for rejection when the time is exceeded serves as a "death-knell" for a load of ready-mix which has been en route beyond the limit, although it is recognized that nothing happens at the instant to make the load unfit for use.

The following experience is cited, not as an example of a practice to be recommended, but rather as an indication of good performance by concrete in spite of unusually severe abuse:

On a day following a heavy rain the second floor of a large addition to a school building was being poured with ready-mix. The centering was supported on sills on the ground. The pour had started shortly after 8 a. m. At about 10:30 the entire new structure collapsed. Some of the mudsills had slipped, throwing the shores out of plumb, and causing the forms to fall. There was a jumbled mass of lumber, reinforcement, and about 35 cu. yd. of 3,000 lb. concrete, some of which had been mixed about three hours previously.

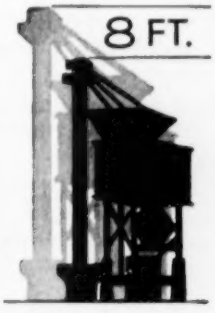
It happened that the concrete contractor had a driveway job, for an industry, already fine-graded and ready for placement, located across town—a distance of about six miles. He set the crew at the school job to pulling out planks and steel from the collapsed mess, and shoveling the concrete into pick-up trucks. The loading was slow, but the re-

(Continued on page 193)

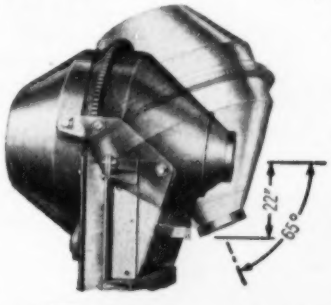
Burmeister

"TILT-UP" MIXER

CUTS PLANT HEIGHT AS MUCH AS 8 FEET



Burmeister's patented "tilt-up" feature—which reduces the mixer's headroom requirement—permits lower plant heights. This means easier crane loading, lower power costs, lower initial costs, less costly "conversions," increased portability, and better over-all control.



● **In addition to reducing plant height, Burmeister's 3 cu. yd. "Tilt-Up" Mixer (left) provides a steeper 65° discharge from one spot, eliminates segregation of concrete and the danger of accidental discharge. It is simple to install, and has an integral hydraulic system—no compressor is required. Write for name of your nearest Burmeister Distributor, without obligation.**

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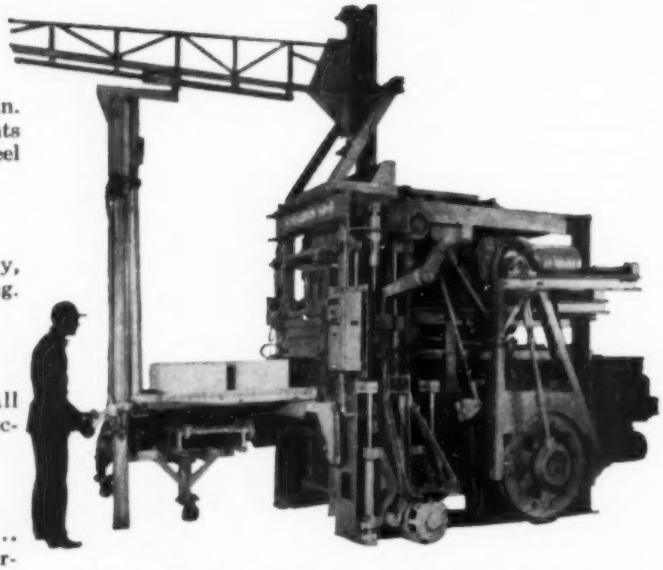

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for FREEDOM FROM DOWN-TIME WORRY.. *100% Cam and Crank-Operated. No Gadgets* to Wear Out or Break. Hardened Mold Box Parts. Standard Make Automatic Controls and Switches.

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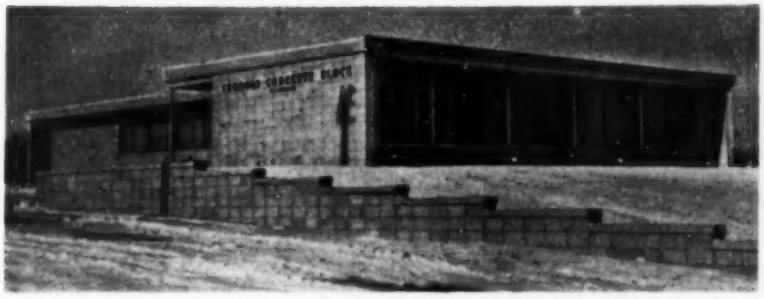
COMPLETE CONCRETE PRODUCT PLANT EQUIPMENT — STANDARD OF THE INDUSTRY

CANADIAN NEWS LETTER



● New concrete masonry office building of the Thorold Concrete Block Co., Ltd., Thorold, Ontario.

JOHN Pennachetti, new president of the National Concrete Products Association (Canada), is one concrete block producer who has turned out block by hand and has seen his company, the Thorold Concrete Block Co. Ltd., turn from a crude operation with a production of 125 units per day to its present size, with two machines that turn out 750 blocks per hour each.

The company is a family affair—John is president; his father, who founded the company is vice-president; his brother Primo is secretary-treasurer; and Andy, another brother, is a director. A younger brother, Louis, takes part in the work during summer holidays.

The Pennachettis were the first to introduce Celocrete to Canada and they have shipped block as far as Baie Comeau, Quebec, hundreds of miles down the Welland Canal and the St. Lawrence River. The company is now one of the top ten block producers in Canada.

As an indication of the growth of the company, it has had three offices since World War II, each bigger than the preceding. The latest one is designed to show the company's products to advantage, and is built of concrete block arranged in a number of patterns. It was designed to serve as a sales aid, as well as an office. Many prospective customers will be shown the variety of patterns available in the products made by the company as they inspect the walls of the new structure.

THE concrete products industry in Canada in 1953 produced 75,000,000 concrete brick, 99,000,000 concrete block, 15,000,000 cinder block, 8,000,000 block of other aggregates, 1,000,000 chimney block, and more than 2,500,000 cu. yd. of ready-mixed concrete.

This shows an increase over 1952, when the figures were 53,000,000 brick, 65,000,000 block, 12,200,000 cinder block, 4,750,000 block of other aggregates, 1,000,000 chimney block, and 1,560,000 cu. yd. of ready-mixed concrete.

TORONTO city officials are now investigating the possibility of developing a building block for commercial use from the ashes obtained from the city's incinerators. The Ontario Research Foundation has developed a building block that withstood tests of 1,000 p.s.i., which meets standard building requirements.

The incinerators produce about 10,000 tons of ash annually, which is now being used mostly for fill.

THE world's first system for electrifying precast cellular concrete floors, developed by a Canadian firm, has already aroused international interest to the point where an American firm, the Flexicore Corporation, is making the electrical distribution part of the system available in the United States.

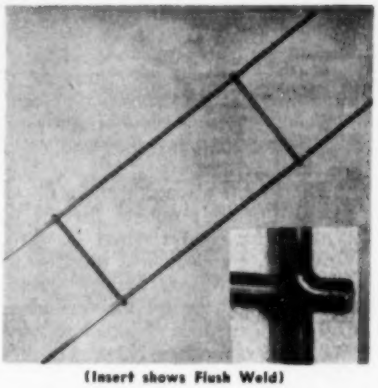
The system, which combines a channel slab and distribution floor, was developed by Harry Hoseason of Murray Associates, Ltd., Toronto. Basically, it utilizes 18-in. channel slabs, redesigned with the bottom filled in to provide one big cell, divided into two parts by removable inflated rubber tubes placed in the forms.

Main feeder ducts of metal carry electricity across the top of the slabs, and allow lateral transportation of conductors to any part of the floor. The feeder is buried in the cement finish coat poured over the precast flooring.

The flooring, called the H-M (after Hoseason and Murray) Conduit Floor, was first used in Canada in the Toronto branch office of Bell Telephone. It provides scope for changes or addition of electrical services at any time.

quality guaranteed

MASONRY WALL REINFORCEMENT



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- **less breakage — strength of rod steel and weld increased**
- **special corners mean no thick joints, better bond, less labor**
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- **furnished in 100,000 psi steel for any wall width**
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BLOK-LOK Standard — 9 gauge steel wire

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Finishes — galvanized wire, hot-dipped galvanized, and brite basic

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NATIONAL READY MIXED CONCRETE ASSN.

SEVERAL weeks ago producers of ready-mixed concrete, attracted by the double-barreled lure of a top-notch machinery show and a fine program of business and technical discussions, converged on Chicago in unprecedented numbers to take part in the 24th annual convention of the National Ready Mixed Concrete Association. The exposition, a biennial affair, was itself a record-breaking show which jammed the world's largest hotel exhibit facilities and overflowed into surrounding parking lots.

The group elected Robert C. Collins of Philadelphia to serve as its president for the forthcoming year. Mr. Collins succeeded Herbert G. Jahncke of New Orleans. Other officers elected at the Chicago meeting were Louis C. Schilling, Miami, first vice-president, Robert Mitchell, Los Angeles, second vice-president, and John Roberts, Norfolk, treasurer. Named to serve on the association's executive committee were Frank Penepacker, Portland, Oreg., F. E. Schouweiler, Fort Wayne, Ind., William J. Hicklin Jr., Jacksonville, Fla., and Murray S. Simpson, Washington, D.C.

PRESIDENT'S ADDRESS

In reviewing his year as president of N.R.M.C.A., Mr. Jahncke laid considerable stress on the industry's cement supply situation. He pointed out that the ready-mix industry's consumption of some 80,000,000 bbl. of cement annually makes it the largest single user of this material, and he further stated that ready-mix producers have been instrumental in developing many new markets for cement.

The speaker reviewed the history of the association's efforts to reach a better understanding with the cement industry, and he emphasized his group's desire to maintain sound and friendly relationships. In this connection he mentioned the practice of several large cement companies in the central west and southeastern sections of the country of selling directly to contractors, by-passing established building material dealers and ready-mixed-concrete producers. This policy, Mr. Jahncke said, prejudices the sale of ready-mixed concrete on many construction jobs.

In discussing the truck drivers' strikers which paralyzed the ready-mixed concrete industry in a number of cities last year, Mr. Jahncke noted that in no case did an individual company seek to gain advantage by effecting a separate settlement. As a defense against similar difficulties in the future he urged members to do the following: improve relations with employees; establish a reputation for their companies as a good place to work; and establish high employee morale through the adoption of sound policies, attitudes, and practices.

SAFETY POLICIES

At a session highlighted by the presentation of this publication's 1953 safety trophies, representatives of the three winning concerns presented brief discussions of their companies' safety policies. W. S. Walters, representing the Fischer Lime & Cement Co., Memphis, winners of the Class A award (over 100,000 cu. yd.) for the second consecutive year, stressed the importance of top management's attitude in all aspects of accident prevention work. Safe practices cannot be forced or legislated, according to this speaker; they must be sold to employees by top management.

Charles Stewart, president of Stewart & Nuss, Inc., Fresno, Calif., recipients of the Class B award (50,000 to 100,000 cu. yd.), gave a brief outline of his company's accident prevention program, in which great stress is laid upon careful maintenance of equipment. Drivers are required to make an immediate report of any needed repairs, and this work receives a high priority for attention in the company's shop. Mr. Stewart also believes that it is of the utmost importance that a safety engineer have the right to dismiss employees for serious in-

● New N.R.M.C.A. officers include (left to right) John W. Roberts, Southern Materials Co., Norfolk, Va., treasurer; Robert C. Collins, Warner Co., Philadelphia, Pa., president; Louis C. Schilling, I. E. Schilling Co., Miami, Fla., vice president; and Robert Mitchell, Consolidated Rock Products Co., Los Angeles, Calif., vice president.

THREE PLANTS AWARDED PIT & QUARRY SAFETY TROPHIES

● Left: W. S. Walters, Fischer Lime & Cement Co., Memphis, with the Class A safety trophy won by his company for the second consecutive year.

● Below left: Charles W. Stewart and E. O. Harwell, both of Stewart & Nuss Inc., Fresno, Calif., holding the Class B safety trophy.

● Below right: Herbert G. Jahncke, retiring president, presenting the Class C safety trophy to Russell P. Mumford, The Beckley & Meyers Co., Springfield, Ohio.

fractions of safety rules without fear of being overruled by top management.

In accepting the Class B award (less than 50,000 cu. yd.) for the Beckley & Myers Company, Springfield, Ohio, R. P. Mumford said that the occasion marked the climax of a six-year effort to establish sound safety practices. Education has been the keynote of this company's safety program, the success of which is indicated by the fact that insurance rates for the firm's last policy year were 47 percent lower than they were six years ago, when the problem of safety first came under close scrutiny.

EQUIPMENT STANDARDIZATION

Robert W. Smith, chairman of the Truck Mixer Manufacturers' Bureau, summarized that organization's recently revised standards. The following sizes become standard on May 1, 1954:

Mixer	Agitator
2½	3¾
3	4¼
3½	5
4½	6¼*
5½	7½*
6½	9*
7½	10¼

*Rating plates designating capacity as an agitator only may be issued for open-top mixers of these sizes.

Revised standards of the National Ready Mixed Concrete Association provide in practically all cases for the additional one-half cu. yd. over the manufacturer's rated capacity required to be guaranteed by the manufacturer in the new standards of the bureau. Mr. Smith pointed out that the two sets of standards (those of the bureau and those of the association) are in complete accord with each other, as well as with A.S.T.M. standards.

INVESTIGATION OF MIXING ACTION

Stanton Walker, director of engineering, discussed the results of the association's tests of concrete truck mixers. The following conclusions are a part of a final report published early this year:

1. For a given number of revolutions, mixing at slow speed is just as effective as mixing at fast speed. The advantage of the faster rate is that the required number of revolutions can be secured in a shorter time.

2. The requirements of current specifications which limit mixing to the minimum of 50 and maximum of 100 revolutions at mixing speed are adequately conservative. The tests showed that the minimum number of revolutions, or fewer, were sufficient to produce concrete of high quality and uniformity. The maximum limit on mixing is necessary to prevent excessive grinding and heat generation.

3. The mixers were capable of mixing a load one-half cubic yard greater than rated capacity essentially as well as one of rated capacity. Nevertheless, it is recommended that, when this is done, the minimum amount of mixing be increased to 70 revolutions as a precautionary measure.

4. Mixing action was sufficiently good that no difference in quality or uniformity could be discerned between those batches for which the aggregates were "split" loaded and those which were "ribbon" loaded. However, it would seem desirable, wherever possible, to take advantage of the preliminary intermingling of ingredients which can be secured by "ribbon" loading.

5. The principal effect of the prolonged mixing of air-entraining concrete, which was done in warm weather, was to cause a progressive reduction in slump. Strength was reduced only when water was added to restore slump, but even then the strength of the truck-mixed concrete was equal to that of the "control" batch to which no extra water was added. Air content was not significantly affected by the prolonged mixing.

6. There was no significant difference in strength level between comparable laboratory and field batches for the same quantity of mixing water. Also, the batch-to-batch uniformity of strengths was essentially as good for the field batches as for the laboratory batches in spite of intentional variations in mixing conditions for the former. Variations in strength level were attributable to differences in water due to changes in class of concrete or in slump and to variations in cement from shipment to shipment.

7. Some of the mixers could be improved by:

a. Providing gauge glasses readable over the entire capacity of the tank.

b. Improvement in automatic water cut-offs.

c. Furnishing of durable and reliable counters.

d. Provision for positive and accurate control of drum speed.

e. Improvement of throw-back blades.

f. Addition of baffles on chutes to eliminate segregation when concrete is discharged onto a flat surface.

The investigation permitted the verification or establishment of limits on amount of mixing and capacity of mixers which would be sufficiently conservative to insure good performance. It also showed the effects, or lack of effects, of mixing speed, type of loading and, for air-entraining concrete, prolonged mixing.

Further research is needed to make a more detailed examination of the variables covered in this investigation and to study other variables such as those having to do with condition of equipment, proportioning, different kinds of materials, and many others which suggest themselves.

ASSOCIATION HONORS STEPANIAN

● At the joint N.R.M.C.A.-N.S.G.A. luncheon, Stephen Stepanian was honored with the presentation of a Certificate of Honorary Membership for Life on the Board of Directors of the N.R.M.C.A. The honor was bestowed upon Mr. Stepanian not only for inventive genius, but also for his untiring efforts to make the association grow and prosper.

COLE ON ATOMIC ENERGY

● Representative W. Sterling Cole, chairman, Joint Committee on Atomic Energy, presented a major address on "The Military Aspects of the Atomic Energy Program". The speech was given nationwide coverage by newspapers, radio, and television.

The congressman reported on the devastating effect of a hydrogen bomb explosion, pointing out that one bomb would blanket a 300-sq. mile area with destruction. He stated that our atomic and hydrogen weapons programs were progressing rapidly, and that an entire "family" of hydrogen weapons is within the realm of possible development.

TRUCK MIXERS FOR DEFENSE

● Henry L. Larson, director, Colorado Civil Defense Administration, and Frank P. Spratlen Jr., Ready Mixed Concrete Co., Denver, Colo. Both men spoke at the forum on Civil Defense, sparkplugging the proposed use of ready-mix trucks as auxiliary fire-fighting units in the event of atomic attacks.

During the convention the association unanimously adopted a resolution for its members to lend full support to the national defense and C.D.A. efforts by offering their ready-mix units to the civil defense program.

EFFECT OF FLY ASH

Delmar L. Bloem, assistant director of engineering, presented a discussion of the effects of fly ash in concrete based principally on research work conducted by the association at its laboratory. The following summary of results is from a bulletin published by the association early this year:

1. The performance of fly ash is related in a general way to its fineness, carbon content, and silica content. These factors alone, however, are not enough to provide a quantitative indication of fly ash quality. Materials which conform to the generally accepted limits for these properties may affect concrete quite differently, particularly as to strength development.

2. Well-constituted fly ashes, in quantities commonly used, have no adverse effects on mixing water requirements. In some cases mixing water may be reduced slightly for a given consistency. Workability and finishing characteristics may be improved in the case of lean concretes or where aggregates are deficient in fines.

3. Fly ash of suitable composition and fineness contributes to strength development of concrete. The contribution is relatively small at early ages but becomes greater with increasing age. The greatest benefits are very lean concrete, possibly because the fly ash provides needed workability as well as some cementing action.

4. Almost without exception, the replacement of a significant amount of cement (10 percent or more) with fly ash will result in reductions in strength at 7 and 28 days. At the later ages of 3 months and 1 year, strengths equal to or greater than normal concrete may be obtained with some fly ashes when as much as one sack of cement is replaced in a cubic yard of concrete.

5. Low temperature or lack of adequate moisture during curing appears to be more detrimental to fly ash concrete than to normal concrete, although the advantage of increased strength gain at later ages for fly ash is lost unless moist curing is continuous.

6. Fly ash tends to suppress the entrainment of air in concrete. The amount of air-entraining agent required to produce a given air content may be several times as great for fly ash concrete as for normal concrete.

7. Fly ash tends to suppress the entrainment of air in concrete. The amount of air-entraining agent required to produce a given air content may be several times as great for fly ash concrete as for normal concrete.

8. It does not appear that fly ash is significantly beneficial or detrimental, in itself, to the freezing and thawing resistance of concrete, although evidence in this regard is inconclusive.

9. Certain fly ashes improve sulphate resistance of concrete and tend to inhibit harmful expansion due to the alkali-aggregate reaction.

10. Shrinkage of concrete does not appear to be significantly affected by fly ash.

11. Due to its formation of cementitious compounds over long periods, fly ash may reduce the permeability of concrete at later ages.

COMMUNITY SUPPORT IN STRIKE SITUATIONS

According to Fred J. Grace Jr., Baton Rouge Sand & Gravel Co., there is for all practical purposes no such thing as effective community support for industry in strike situations. He believes this is in part due to industry's complete failure to alert the public to the tragic consequences of too many years of labor coddling.

Mr. Grace expressed the opinion that virtually the only bright spot in the picture is the Alabama "Right-To-Work" Act which became effective on August 28, 1953. This legislation, which has since been enacted by a number of other states, reads as follows:

To provide that the right of a person to work shall not be denied or abridged on account of membership or non-membership in any labor union or labor organization, and to prohibit agreements or combinations requiring membership in a labor union or labor organization as a condition of employment or continuation of employment, and to provide for rights and remedies with reference thereto.

Be it enacted by the Legislature of Alabama:

Section 1. It is hereby declared to be the public policy of Alabama that the right of persons to work shall not be denied or abridged on account of membership or non-membership in any labor union or labor organization.

Section 2. Any agreement or combination between any employer and any labor union or labor organization whereby persons not members of such union or organization shall be denied the right to work for said employer, or whereby such membership is made a condition of employment or continuation of employment by such employer, or whereby any such union or organization acquires an employment monopoly in any enterprise, is hereby declared to be against public policy and an illegal combination or conspiracy.

Section 3. No person shall be required by an employer to become or remain a member of any labor union or labor organization as a condition of employment or continuation of employment.

Section 4. No person shall be required by an employer to abstain or refrain from membership in any labor union or labor organization as a condition of employment or continuation of employment.

Section 5. No employer shall require any person, as a condition of employment or continuation of employment, to pay any dues, fees or other charges of any kind to any labor union or labor organization.

Section 6. Any person who may be denied employment or be deprived of continuation of his employment in violation of Section three, four, or five or of one or more of such Sections, shall be entitled to recover from such employer and from any other person, firm, corporation, or association acting in concert with him by appropriate action in the courts of this State such damages as he may have sustained by reason of such denial or deprivation of employment.

Section 7. The provisions of this act shall not apply to any lawful contract in force on the effective date

hereof but they shall apply in all respects to contracts entered into thereafter and to any renewal or extension of an existing contract.

Section 8. The provisions of this act are declared to be severable, and the unconstitutionality or invalidity of any section or provision of this act shall not affect the remainder thereof.

REVIEW OF 1954 STRIKES

Officials of ready-mixed-concrete firms located in Kansas City, New Orleans, Mobile, and St. Louis took part in a panel discussion of the serious strikes which occurred in those cities during 1954. The following individuals took part: George W. Garrett, Stewart Sand & Material Co.; Herbert G. Jahncke, Jahncke Service, Inc.; Best W. Milling, Underwood Builders Supply Co.; and R. F. Powell, Concrete Incorporated.

These speakers made the following observations and recommendations, based on their experience with long and costly strikes last year:

1. It is a serious mistake for any concern to allow its customers to hold the right to negotiate its union contract.
2. If ruinous concessions are to be avoided, producers must present a united front against unreasonable demands by labor unions. The willingness of a single company to negotiate and settle independently may so bolster union demands as to make a reasonable settlement of issues virtually unattainable.
3. All companies must pay more attention to basic labor relations in order to drive out the wedge which unions have driven between labor and management.
4. In all four of the cities one of the basic issues was an effort by the unions to take over the prerogatives of management. In all cases the only effective defense the companies developed was based upon solidarity.

GROUP BARGAINING

According to W. Crosby Roper Jr., a "tight" organization with a limit on withdrawal can be the best help in joint bargaining negotiations. Other points brought out by Mr. Roper:

1. Employers have the right under the law to designate an association or a committee or a labor relations counsel, as a joint bargaining agency. Unions cannot *make* employers bargain individually, although they may properly so request.
2. Caution must be exercised in joint actions, and there must be a history of willingness to bargain in the true sense. Bargaining must be on a broad basis—not just on selected issues.
3. Employers must keep a wary eye on their status under existing anti-trust laws, for it is not enough just to state that the purposes of a bargaining group are limited to the settlement of labor disputes. There is always the danger that an expensive labor settlement might tempt the affected companies to seek ways and means of financing increased costs.

SAMPLING AND TESTING

Leading off with the statement that sampling and testing of ready-mixed concrete are of such importance to producers that they "may very well determine whether or not some of us will stay in business", Fred F. Bartel, Tews Lime & Cement Co., Milwaukee, went on to discuss various aspects of this perennial problem. Following are some of Mr. Bartel's observations:

In a great majority of cases the best samples can be obtained by diverting concrete from the mixer discharge chute into a buggy or wheelbarrow. The concrete can then be wheeled to a place on the job where it can be remixed and strength specimens can be molded and left undisturbed until the following day. Inspectors in most cases seem to prefer molding cylinders where concrete is being discharged on the job and then transporting the fresh cylinders to a place where they may not be disturbed. The effect of this will, of course, depend on the mix, but it is doubtful if it will improve the strength of a properly molded cylinder and can very likely harm it.

In making the slump test, the base on which the test cone is to rest should be level and firm and free from vibrations. During molding of the concrete, the slump cone must be held firmly in place and not allowed to rise from the base. The concrete itself must be deposited carefully in the center of the mold so that segregation of aggregate particles does not take place. The rodding of each of the three layers must be uniform and of sufficient depth to just penetrate the underlying layer. Removal of the mold deserves the greatest of care: the mold should be slowly raised vertically so that the cone of concrete will not break or slough off laterally.

Latest revisions to A.S.T.M. C-31 will probably permit the use of hydrostone or hydrocal gypsum plasters for capping but will absolutely forbid the use of ordinary plaster of paris. Neat cement, lumnite cement, and certain mixtures of sulphur and granular materials (Leadite, Vitrobond, etc.) will also be approved, provided that they are allowed to harden sufficiently so they will not flow or fracture under load. With any of these materials, caps must be kept as thin as is practicable. Cylinders with very rough ends should be sawed or ground prior to capping.

Loading specimens too rapidly during the last half of the maximum load will probably yield a higher breaking strength, while loading more slowly than specified will show lower strengths than if proper procedures are followed.

Testing only one cylinder is considered worthless. Three cylinders must be tested for each age of test from each load of concrete sampled. It is the average of these three cylinders which constitutes a test. Where concrete is sold on a strength basis, the Specifications require that the average of all such three-cylinder tests exceed the specified minimum, that no test fall below 80 percent of the minimum, and that the average of any five consecutive tests exceed the minimum.

● J. W. Lendved (left) and Austin K. Thomas, both of Chain Belt Co., using two way radio to communicate from the company's exhibit to room headquarters and elsewhere.

● Blas Lamberti and Mario Sauma, both of the C. A. La Mezcladora, Caracas, Venezuela, S. A.

SELL YOUR SERVICES

What are the fundamental things ready-mixed-concrete producers should be doing to make people realize the economy and convenience of their material? The following are some of the methods suggested by S. H. Westby, manager, Housing and Cement Products Bureau, Portland Cement Association.

1. Use delivery trucks as promotion tools. Keep them clean, and have them painted in a distinctive color combination that people will automatically associate with your firm name.
2. Use local newspaper advertisements, direct mail, and radio announcements as direct promotional aids to convince people to use ready-mixed concrete.
3. Have classified telephone book listings under several headings, such as building materials, concrete, and paving materials.
4. Be sure the customer gets intelligent and courteous treatment when he phones.
5. Put an attractive sign on your plant, so that customers can find it. If you're off the main highway, place several signboards at strategic points.
6. See that drivers are well informed on the proper use of ready-mixed concrete, and trained in such subjects as the importance of not adding water to the mix at the job site, the need for moist curing, and the proper bracing of forms.
7. Set up an adequate sales program and stick with it. Use the sales promotion aids which the Portland Cement Association furnishes at cost.

STANDARDIZE YOUR SALES AGREEMENT!

According to Robert C. Collins, newly-elected president of The National Ready Mixed Concrete Association, the concrete buyer is insisting (1) that the price be "right" (*i.e.* lower) and (2) that he receive service "par excellence". As a result the concrete salesman is caught in a squeeze play he hasn't been in for a number of years.

The purpose of the suggested N.R.M.C.A. sales agreement clauses is to protect the concrete seller by limiting his responsibility as to service on the job, road conditions, etc. Having a standard agreement form provides a point at which to begin discussion with the buyer, and also forestalls later difficulties by spelling out terms and conditions in advance.

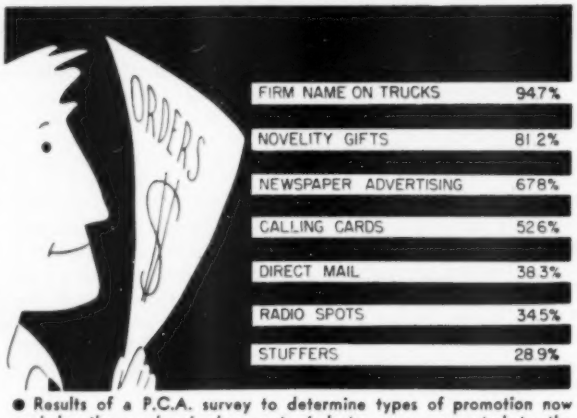
Price protection for the "life of the job" is a thing of the past in many areas. No ready-mix producer can stay in business very long if he commits himself to firm prices for long periods of time. This clause belongs on the face of every sales agreement: "All prices are subject to immediate revision to reflect any change in our current delivered costs of portland cement and aggregates, upon which prices are based."

Is this being unfair to the customer? He has two methods of obtaining concrete for his project—he can buy cement, sand, and gravel and mix his own, or if he is smart, he can buy ready-mixed concrete. If he decides to mix his own, would he be guaranteed firm prices for cement and aggregates? Certainly not! If he buys subject to this clause he will benefit if aggregate and cement prices drop. Would he pay you *firm* prices for the "life of the job" if you dropped your current price to other customers during that period? *Prices* cannot be guaranteed unless *costs* too are guaranteed!

Every concrete producer should use some form of sales agreement. Adopt the suggested N.R.M.C.A. clauses to your local needs. Use a neat, dignified listed form that will give dignity and substance to your own business and your industry.

Get your customers accustomed to using your standard sales agreement. And, if he balks, saying all the protection is in your favor, merely remind him that in ready-mix concrete, of all industries, the buyer always holds the whip hand, and can go into competition with you if he thinks he can turn out better concrete for less!

TYPES OF PROMOTION NOW USED



● Results of a P.C.A. survey to determine types of promotion now used by the ready-mixed-concrete industry were presented to the Chicago convention by S. H. Westby of the Housing and Cement Products Bureau.

WHAT USERS THINK ABOUT READY MIX

In 13 years the production of ready-mixed concrete has increased more than five-fold, from 10,000,000 cu. yd. in 1940 to 58,000,000 last year. Today ready-mix accounts for almost one-third of all concrete produced. These facts were presented at the Chicago meeting by G. H. Paris, assistant director of promotion, Portland Cement Association.

This rapid growth took place during a period when supply was generally short and demand high. Quality often suffered. Many new and inexperienced producers entered the field, and even the established producers found it hard to maintain normal standards of quality.

Polled recently by the Portland Cement Association to determine their reactions to the concrete and the service ready-mixed-concrete producers are supplying, the nation's contractors rated the following as the most important points of complaint about ready-mix: delivery schedules, strength, finishing qualities, quantities delivered, uniformity, price, slump, and winter construction.

Although listed in the order of importance by the contractor, these points of contention vary considerably in their frequency as complaints. Slump not as ordered is the most frequent complaint today, followed by undependable delivery schedules, prices, variable uniformity, strength not as ordered, quantity delivered, poor finishing qualities, and the inability to furnish heated materials for winter construction.

● A panel on cost determination systems included (left to right) John W. Murphy (incoming N.S.G.A. president), Eugene J. Halter, and Paul J. Kremer.

Comparing contractors' gripes in 1953 with those uncovered in similar 1947 and 1949 surveys shows the frequency of complaints as follows:

Points (in order of importance)	1953	1949	1947
Delivery schedules	2	1	1
Strength	2	6	4
Finishing qualities	7	7	7
Quantity delivered	6	5	6
Uniformity	4	2	2
Price	3	4	3
Slump	1	3	5
Winter construction	8	8	8

Three-fourths of the contractors surveyed purchase ready-mixed concrete for about 90 percent of their work. Nine-tenths buy it for more than half their jobs. Convenience is the main reason for buying ready-mix, according to 85 percent of the contractors. Their comments emphasize the need for maintaining service and quality to provide the "convenience" of reduced labor, equipment, and overhead possible through ready-mix.

OUTLOOK FOR 1954

The meeting concluded with a symposium on business conditions, in which ten leading producers from various sections of the United States expressed views as to business prospects in their areas for 1954. The general conclusion reached was that sales this year would at least equal if not slightly exceed those of 1953, which itself was considered a banner year. This optimism was expressed in spite of construction getting off to a slow start in certain areas. Of the areas reported, only southern California is expected to exhibit an appreciable decline—estimated to be about 10 percent.

On the other hand, certain areas are anticipating exceptionally good years. For example, one Southern producer looked upon the far South as an economic frontier which would undergo important industrial growth. A Northcentral producer reported that the Williston oil basin in North Dakota and the new taconite mining area in Minnesota are boom developments which are spurring construction and hence the use of ready-mixed concrete. Because of its relative newness, the ready-mix industry in the Chicago area is expected to continue at high production levels. The outlook in the New York area is also good, based upon continued urban expansion.

The producers also looked for 1954 to be a year of challenge. Greater competition is anticipated in all areas, which may ultimately result in tighter pricing conditions. Coupling this trend with higher operating costs and labor costs, the producers predicted that profits would probably decline even though sales would remain at high levels. Many producers felt that the increased competition would benefit the industry as a whole, however, since it would place a premium on increasing operating efficiency, producing high-quality concrete, and providing top-notch service to customers.

AMERICAN CONCRETE INSTITUTE

THE American Concrete Institute celebrated its 50th anniversary with a highly successful annual convention at the Shirley-Savoy Hotel in Denver on February 22 through 26. Interest was heightened by an exhibit arranged by the local committee which included commercial displays by a representative cross section of firms offering equipment, materials, and services in connection with concrete production and construction. The presence at the convention of approximately 150 ladies—over 100 were from outside Colorado—added a spirit of sociability which was distinctly new for A.C.I. events.

The new officers installed during the convention were as follows: president, Professor Charles H. Scholer, Kansas State College, Manhattan, Kan.; vice-president (two-year term), Professor Frank Lerekes, Iowa State College, Ames, Iowa. Named as directors (three-year terms) were Professor Phil M. Ferguson, University of Texas, Austin, Tex.; Joseph F. Jelley, U. S. Department of Defense, Washington, D. C.; Hugh C. Ross, Hydro-Electric Power Company, Toronto, Ont.; and Professor George W. Washa, University of Wisconsin, Madison, Wis.

Charles S. Whitney, consultant, Milwaukee and New York, continues as vice-president under last year's election. It was announced that Bryant Mather, Waterways Experiment Station, Jackson, Miss., has become chairman of the important Technical Activities Committee, which supervises the publication of the A.C.I. *Journal* and is in general charge of all institute technical committees.

After two preliminary days of officers' meetings and twenty-odd technical committees the convention proper got off to an enthusiastic start with the 50th Anniversary dinner on Monday evening. The toastmaster was R. F. Blanks, Great Western Aggregates, Inc., Denver, A.C.I. past-president and chairman of the local convention committee, and the principal speaker was Rear Admiral J. F. Jelley, recently appointed director of conservation, U. S. Department of Defense, and a director of the A.C.I.

● Henry L. Kennedy (left), retiring president of the American Concrete Institute, congratulates Charles H. Scholer on his election as Institute president for 1954.

HISTORY OF A.C.I.

Professor Raymond E. Davis, Berkeley, Calif., a past-president of A.C.I., presented an interesting summary of the history of the institute. The first movement toward an organization to deal with problems of concrete was at a conference during the Engineering Congress at the Louisiana Purchase Exposition in St. Louis in 1904, during which the lack of standard practice in making concrete block was discussed. The first formal organization was known as the National Association of Cement Users, whose first convention was held in 1905. In 1913 the name of the society was changed to the American Concrete Institute. In 1919 the late Harvey Whipple was appointed secretary on a part-time basis; he continued

in this position (which soon became full-time) until shortly before his death in 1952. Professor Davis cited several references in early papers before the society which anticipated various modern practices. Thus precast columns, girders, and roof slabs were described in 1907, and the elements of tilt-up construction were outlined in 1908. The first joint committee report appeared in 1916. Plastic flow was described in 1917, and construction of prestressed tanks was reported in 1922. Discussions of the field control of quality concrete began to appear in 1926. Publication of the A.C.I. *Journal* in substantially its present form was undertaken in 1929. Various other sign-posts of progress mentioned by Professor Davis were within the memory of many men in the audience.

● A.C.I. conventioners, touring the laboratories of the Bureau of Reclamation, inspect the results of a test on a prestressed-pretensioned railroad slab.

QUALITY CONCRETE MOVIE

A new color and sound 36-minute movie, *How to Transport, Place, Finish and Cure Quality Concrete,* was viewed with interest and approval. This was the second film developed under the joint sponsorship of A.C.I. and the Portland Cement Association. Various views of good practices in handling and placing concrete on different types of structures were shown. The importance of careful finishing and of adequate curing was emphasized. It was announced that this film and also its predecessor, *Production of Quality Concrete,* are now available on request to P.C.A. division offices or to the A.C.I. office at Detroit.

LIST OF EXHIBITORS

COMPANY	PRODUCT
American Steel & Wire Co., Cleveland	Form ties
Autolene Lubricants Co., Denver	Air-entraining agent
Baldwin-Lima-Hamilton Corp., Philadelphia	Testing machines
Centennial Engineering Co., Denver	Structural design
Cen-Vi-Ro Mfg. Co., Nampa, Idaho	Concrete pipe
Colorado Builders Supply Co., Denver	Curing material
Cobusco, Denver	Construction equipment
Dart Mfg. and Sales Co., Denver	Vibrators
Felker Mfg. Co., Torrance, Calif.	Saws
Frissenet Co., Inc., New York City	Design
Gar-Bro Mfg. Co., Los Angeles	Handling equipment
Granco Steel Products Co., Granite City, Ill.	Reinforced deck forms
Hunts Process Co., Los Angeles	Curing and stripping sprays
Instant Moisture Control, Denver	Moisture meter
Kelley Machine Div., Buffalo	Power trowel
Long Construction Co., Kansas City	Lift-slag construction
Maginniss Power Tool Co., Mansfield, Ohio	Power tools
Master Builders Co., Cleveland	Dispersing agent
Preload Construction Corp., New York City	Beam winder for tanks
Prestressed Concrete Co. of Colorado, Denver	Prestress design
Prestressing Inc., San Antonio	Prestress design
Pumice, Inc., Idaho Falls	Pumice aggregate
Quickway Clamp Co., Denver	Shoring
Richmond Screw Anchor Co., Brooklyn	Form ties
John A. Roebling's Sons Corp., Trenton, N.J.	Tension ends
Sika Chemical Corp., New York City	Air-entraining agent
Sonoro Products Co., Los Angeles	Laminated paper forms
Superior Concrete Accessories Inc., New York City	Accessories
Symons Clamp and Mfg. Co., Chicago	Form ties
Teckkote Co., Inc., Inglewood, Calif.	Aidmixes
Thompsons Water Seal, San Francisco	Water seal
Universal Form Clamp Co., Chicago	Form ties
Viber Co., Burbank, Calif.	Vibrators
Water Seals, Inc., Chicago	Water stops
Western Waterproofing Co., St. Louis	Sand blasting

AWARDS

At the Awards Luncheon, President Kennedy announced that Professor Raymond E. Davis had been elected an honorary member of the institute. He thus became the fifth living honorary member of the society. Awards were presented to the following: Wason Medal for most meritorious paper to David Watstein, Washington, D. C.; Wason Medal for noteworthy research to Professor Phil M. Ferguson and Professor J. Neils Thompson, both of the University of Texas; Construction Practice Award to A. M. Klein, New York City and J. J. A. Crockett, London, Eng.

Certificates in recognition of service on the board of directors were presented to three members: Frank H. Jackson, Washington, D. C., past-president; L. E. Morris, Atlanta, Ga., retiring director; and W. H. Price, Denver, Colo.

PRESIDENT'S ADDRESS

In his address as retiring president, Mr. Kennedy restated the objectives of A.C.I. as a public service in disseminating information for the improvement of design, construction, and manufacture of concrete products and structures. He emphasized that as the membership grows, the institute should increase its service to members and to the public. He announced that to this end, the directors had authorized the expansion of the staff by the addition of a technical director who will aid the technical committees, and who will be available to meet with local groups to discuss the institute's work and receive suggestions for improvements in services. Mr. Kennedy spoke of his observation during a recent European trip that the A.C.I. is held in high esteem abroad.

CELLULAR CONCRETE

An interesting report on the production and characteristics of "cellular concrete" was presented by R. C. Valore Jr., National Bureau of Standards, Washington, D. C. The type of lightweight material, commonly weighing about 40 lb. per cu. ft., has been developed extensively abroad, especially in northern Europe, but has had little application in this country except as poured-in-place insulating medium on roof decks. Three methods of obtaining cellular structure have been used: by an aluminum powder, by hydrogen peroxide (with bleaching powder), and by a foaming agent. The foaming method has been found the cheapest abroad.

COMBINED FORM AND REINFORCEMENT

A recently developed type of combined form and reinforcement for concrete slabs was described by Bengt F. Friberg, consulting engineer, St. Louis, Mo. The form proper is deeply-corrugated, cold-rolled steel sheet of suitable weight; necessary reinforcing bars are welded to each sheet. Lengths of these panels up to 14 ft. are available. Mr. Friberg reported working stresses in the high-strength steel sheets up to 70,000 p.s.i. He referred to this type of construction as "re-form", *i.e.* reinforced form, as compared to "re-bar", as descriptive of the conventional reinforcing bar type.

RESEARCH SESSION

The research session of the convention, which has become a regular feature of A.C.I. meetings, was held at the auditorium in the Bureau of Reclamation Laboratories at the Denver Federal Center. The session was in charge of Professor S. J. Chamberlin, chairman, and Professor George W. Washa, secretary of the research committee. In welcoming A.C.I. to the Bureau of Reclamation L. N. McClellan, assistant commissioner, referred to the laboratory as "a tool of engineering, science, and construction". Brief, informal progress reports on a number of research projects were presented, including the following:

H. W. Brewer, Bureau of Reclamation, reported that steam curing of concrete blocks gave higher strength at early ages, but less durability than fog curing.

T. G. Clendenning, Ontario Hydro-Electric Power Commission, reported that at 12 hours a 7-bag mix containing 2 percent calcium chloride showed double the strength of the same mix without chloride, but that at 24 hours the strengths were almost the same.

P. H. Peterson, U. S. Naval Civil Engineering Research Laboratory, stated that the chief factors causing damage to runways by jet planes are high tire pressure, spillage of fuel, and the heatblast of jet engines—temperatures up to 2,500 deg. impinged at an angle of 15 deg. Test slabs are used for evaluating improvements in construction.

G. M. Nordby, University of Colorado, tested 4- by 6-in. beams, prestressed with stranded cables and with smooth wire, by applying 1,000,000 cycles of the designed load. The tests indicated stranded wire is superior to smooth wire for resisting fatigue.

F. T. Mavis, Carnegie Institute of Technology, showed colored movies of simultaneous impact tests of concrete beams reinforced with hard steel and with structural steel. The beams with hard steel were the stronger.

Throughout an entire afternoon the extensive main laboratories were open for inspection, with various demonstrations conducted by the personnel. A particularly impressive event was the compression test of a 24- by 48-in. cylinder in the 5,000,000-lb. testing machine—largest in the world. The 6-month-old cylinder broke at 8,200 p.s.i. The collapse of the cylinder sounded more like an explosion than ordinary crushing; but the same conical break common with ordinary cylinders was observed.

AMERICAN CONCRETE PIPE ASSOCIATION

AT their 46th annual convention, held in San Francisco, members of the American Concrete Pipe Association sought to co-ordinate their efforts in solving problems common to all and to plan more intensive promotional efforts for the coming year; they pledged their united efforts in the maintenance and improvement of the high standards for their product which have been largely responsible for trebling sales and production in the last decade.

An affiliate organization, the American Concrete Agricultural Pipe Association, held its fourth annual meeting in the same city, with President J. W. Porter, Gifford-Hill-Western, Inc., Dallas, presiding. The agricultural pipe group elected the following officers: A. M. Herman, Concrete Conduit Co., Colton, Calif., president; Harry Tellyer, Tellyer Concrete Pipe Co., Albuquerque, vice president; G. F. Lillie, Platte Valley Cement Tile Mfg. Co., Fremont, Neb., secretary; and W. B. Freeman, Lock Joint Pipe Co., Denver, treasurer.

Directors, all re-elected, include G. D. Williamson, Valley Concrete Pipe & Products Co., Yuba City, Calif.; Richard Reynolds, Van Cleve Construction Co., Exeter, Calif.; and Earl Eby, Elk River Concrete Products Co., Helena, Mont.

After two days of concurrent committee meetings and a session of the board of direction, the American Concrete Pipe Assn. opened its formal sessions with President Ivy Smith presiding.

A Canadian, A. W. G. Clark, British Columbia Concrete Co., Ltd., Vancouver, B. C., was honored by his election to the presidency of the A.C.P.A. for the coming year. Vice-presidents chosen were as follows: Hugh P. Ford, Eugene Concrete Pipe & Products Co., Eugene, Oreg.; Carl A. Bluedorn, Zeidler Concrete Products Machinery Co., Waterloo, Iowa; and Harry W. Heath, Lock Joint Pipe Co., East Orange, N. J.

David A. Decker, Mid-West Concrete Pipe Co., Franklin Park, Ill., was re-elected secretary, and J. D. Mollendorf, Continental Concrete Pipe Corp., Chicago, was re-elected treasurer.

Three new directors, to serve until the 1957 annual meeting, were chosen, as follows: Ivy Smith, Sherman Concrete Pipe Co., Jacksonville, Fla.; Henry C. Eames, New England Pipe Corp., Newton Uppers Falls, Mass.; and George B. Denham, Faulkner Concrete Pipe Co., Hattiesburg, Miss.

● A. W. G. Clark, newly elected president of the American Concrete Pipe Association (right) is shown presenting a plaque and gavel to Ivy H. Smith, outgoing president, in recognition of two years of outstanding service.

● A. M. Herman (left), incoming American Concrete Agricultural Pipe Assn. president, receives congratulations from J. W. Porter, retiring president.

DRAIN TILE DEMAND

There is a tremendous demand for drain tile in the corn-belt region, Minnesota farmers alone having purchased and laid 20,000,000 ft. in 1953. Concrete tile has definite advantages if properly made, and prices (about 11 cents per ft. for 6-in. tile) yield a good profit to those manufacturers who are conscientiously out to produce a superior product. This message was presented at the San Francisco meeting by Philip W. Manson, professor, Division of Agricultural Engineering, University of Minnesota.

Sulphate-resistant cements definitely need to be used to assure durability, the speaker stated, and he described and illustrated tests made using 122 different types and brands of cement to prove the point. Test cylinders are placed in wooden crates and submerged for varying periods in the waters of Medicine Lake, near Watertown, S.D., where the natural concentration of $MgSO_4$ and Na_2SO_4 runs from 4 to 10 percent. Tests are run at frequent intervals, some of the specimens having remained submerged for nearly 20 years. Brief submersion, less than five years, is seldom indicative, although complete disintegration has taken place in poor-quality concretes in less than five years.

In Professor Manson's opinion, based upon his exhaustive research and field studies, the ideal tile (made in the popular 6-in. diameter with ½-in. wall thickness . . . and no thicker) comes from a machine of the packerhead type and makes use of the maximum amount of sound, coarse (pea gravel) aggregate in a 1:2:1 mix to yield about 31 standard (or 26 extra-strength) 6- by 12-in. tiles per bag of Type V cement. Steam curing is an absolute necessity, and a cycle beginning with 6 hours in saturated air followed by 32 hours at 155 deg. F. is satisfactory, although higher temperatures, at least 212 deg. F., are much to be desired.

OUTFALL SEWER EXTENDED

According to A. M. Rawn, chief engineer and general manager, Sanitation Districts of Los Angeles County, the continued use of concrete pipe in sewerage works in Los Angeles County is based on past performance. Particularly, it has proved "seaworthy" and highly resistant to corrosion in the outfall sewer lines extending into the Pacific Ocean. The original 60-in. dia. outfall, laid on the ocean floor, was followed by the laying of a parallel 72-in. dia. mile-long line about five years ago. The latter is now being extended and improved for wider diffusion of wastes as sewage carry-off rose from 20 m.g.d. in 1940 to a present 170 m.g.d.

The 72-in. outfall is being extended another 1,800 ft. seaward where increased depth (from 100 at present to 150 ft.), together with "diffuser" holes in the pipe, is expected to bring about wider diffusion of the sewage. The old 60-in. line is also presently being drilled with diffuser holes, and Mr. Rawn exhibited one of these barnacle-encrusted cores to indicate the excellent condition of the concrete.

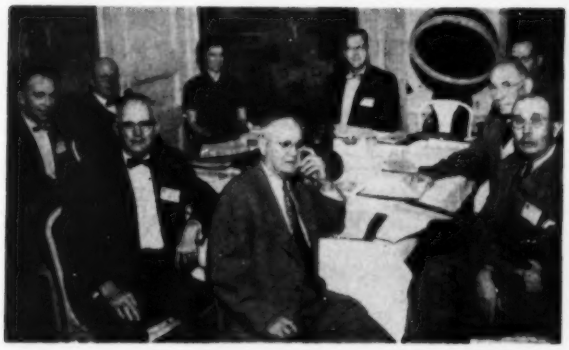
A crane-equipped dredge is laying the pipe, aided by divers on the ocean floor. Latest practice is to join two 72-in. by 24-ft. sections on the placing-barge deck before lowering. A steel strongback speeds up the work of lowering and laying the 48-ft. long extensions. A shore winch pulling long cables seats the pipe at a signal from the diver, and communication is by radio. Joints are lead-caulked by a diver.

Molybdenum-chromium alloys of cast iron are used in the joint rings. Joint details in the present work were further refined by adding a rubber gasket to insure tightness before the lead was caulked in between the iron end rings.

CONCRETE IRRIGATION PIPE

New water supplies recently became available via canal and conduit just in the nick of time in California's great Central Valley, as wells went deeper and deeper and finally ran dry. The installation of a concrete-pipe full-pressure system in a typical 56,000-acre district devoted to the growing of cotton and potatoes was described by Samuel Fortier, chief engineer, Delano-Early-March Irrigation District, Delano, Calif. Concrete was adopted

● Officers and Board of Directors of the American Concrete Pipe Association for 1954 include: (seated, left to right)—Louis F. Dolch, A. B. Metcalf, Hugh P. Ford, R. B. Carroll, David A. Decker, A. W. G. Clark (president-elect) and Ivy H Smith (past president). (Standing, left to right)—George B. Denham, J. D. Mollendorf, Harry W. Heath, Carl A. Bluedorn, G. D. Williamson, Henry C. Eames, Howard P. Peckworth (managing director) and R. A. Norman. Directors not shown here are H. E. Eschenbrenner Jr. and Peter Van Kuran.



● 1954 Board of Directors, American Concrete Agricultural Pipe Association; President A. M. Herman, Colton, Calif., is at the far end of the table. Clockwise from him are G. F. Lillie, secretary, W. B. Freeman, treasurer, Earl H. Eby, director, H. B. Tellyer, vice president, G. D. Williamson, and R. R. Reynolds, directors, H. F. Peckworth, managing director, and Mrs. Millet, stenotypist.

● Guest speakers at the A.C.A.P.A. meeting included (left to right) Philip W. Manson, professor, University of Minnesota, Division of Agricultural Engineering; Howard G. Curtis and Frank E. Rippon, chief and assistant chief respectively of the Canals Branch, Bureau of Reclamation, Denver; and Samuel Fortier, chief engineer, Delano-Early-March Irrigation Project, Delano, Calif.

for its high carrying capacity and estimated long life (at least 40 years). Diameters range from 72 in. down to 12 in., the system being designed to supply each 160-acre maximum holding with 900 g.p.m. under a minimum 5-ft. head. The full-pressure system was chosen for its flexibility, and rubber-gasket joints are employed throughout, following the precedent set up by the Bureau of Reclamation in the Coachella Valley, farther south in California. Part of the system is already installed and in service, and leakage has been surprisingly low, according to Mr. Fortier. Peak demand is in the month of July. Source of supply is the new concrete-lined Friant-Kern Canal.

STAFF MEMBERS REPORT

Reports by Ivy Smith and Howard F. Peckworth, association managing director, dealt with the numerous problems facing the concrete pipe industry in 1954. Mr. Smith reported that in 1953 he traveled about 25,000 miles on business matters related to the association. Both men referred to 1953 as another peak production year in which output approximated 11,000,000 tons. However, during the latter part of the year, competition increased as a result of a switch from a seller's to a buyer's market; it was stated that companies unprepared for the change lost many sales to their more aggressive competitors.

It was also pointed out that changes in the national administration in 1953 brought forth the need for readjustment; in particular, changes in personnel of bureaus concerned with the concrete pipe industry meant the necessity of familiarizing the new personnel with the latest significant developments in the industry, such as hydraulic coefficients, increases in strength of pipe, new sewer designs, and better methods of pipe installation.

The speakers expressed the opinion that concrete pipe production would remain at a high level in 1954. The trend to large diameters was also noted. The industry was advised to maintain high quality, to inspect installations in order to insure that the best methods are being utilized, and to concentrate on local promotion. It was felt that the lack of local promotion was largely responsible for the declining sales of certain firms in 1953.

In his talk on the Washington scene, John Ruhling, Washington representative of the association, outlined two prime objectives of the coming months: (1) to gain full recognition by all federal agencies of the true hydraulic coefficients of concrete pipe and corrugated metal pipe based on recent University of Minnesota (St. Anthony Falls Hydraulic Laboratory) experiments and government tests in Washington; and (2) to publicize to all concerned the load-bearing ability of concrete pipe under various bedding and backfilling conditions. According to Mr. Ruhling, this data should be published in a standard table of allowable minimum and maximum heights of fill for concrete pipe installation.

John G. Hendrickson, research engineer, reported on a number of recent experiments, including a Georgia research project on concrete pipe joints and another at Tulane University on concrete pipe sewers. He also reported on a recent strength test study of large-diameter pipe and a forthcoming Highway Culvert Hydraulic Handbook. Regarding the large-diameter pipe tests, the speaker expressed the hope that the tests would lead to an accurate design of pipe greater than 72 in. in diameter. Mr. Hendrickson also announced that the fourth annual short course school will be held on October 25 to 27 at the Statler Hotel, St. Louis, Mo.

● The meeting of the Technical Problems Committee of the American Concrete Agricultural Pipe Association with Representatives of the U.S. Bureau of Reclamation and guests in San Francisco February 23. J. Walter Porter, Gifford-Hill-Western, Inc., 1953 President of the A.C.A.P.A., sits at the head of the table.

AUTOCLAVE BUILDING PRODUCTS ASSOCIATION

THE 48TH annual convention of the Autoclave Building Products Association was held at St Louis during the second week of March. The three-day session was devoted primarily to business and technical discussions, with one pleasant detour, however, in the form of a visit to Pacific Brick & Block Company's plant at Pacific, Mo.

In accordance with the group's long-standing practice, all officers were re-elected to serve a second term. Thus, the following individuals will serve until the 1955 convention, which is tentatively scheduled to be held in Buffalo; Dale Cobb, president; Leo J. Ryan, vice-president; Henry De Geus III, secretary-treasurer; Elmer R. Coats, sand-lime products committee chairman; and Ralph E. Cromis, concrete products committee chairman.

AN ARCHITECT VIEWS CONCRETE MASONRY

Jack Rausch, an architect employed by a prominent St. Louis firm, had the following general comments to make about concrete masonry:

Much needs to be done to give the architect the information he wants and needs pertaining to such matters as relative shrinkage, and expansion and contraction points.

The average architect agrees that autoclaving is highly desirable because it stabilizes the product.

A successful architect is in a position to select a higher-priced material, such as autoclaved block, in order to prevent wall cracks and reduce maintenance costs in general.

It is virtually an axiom that the worst wall cracks in a building occur in the president's office.

PRESSURE VESSELS

In a general discussion of the use of pressure vessels for the autoclave curing of concrete products, Ray Hickman, Richmond Engineering Co., stressed the following points:

It is preferable to have autoclaves built by a single concern which has the facilities and experience necessary to build true code vessels. Safety, quality, and control are all likely to be better in "package" production than in field assembly.

The recent trend toward larger cylinders has aggravated shipping problems and has resulted in a considerable jump in delivered prices. Cylinders measuring 9 ft. 9 in. in diameter by 120 ft. long, however, can now be shipped by rail from Richmond to many points in the East and Southeast, and clearances will soon be obtained to a number of midwestern cities.

NEW AUTOCLAVE INSTALLATION

Fred Reinhold, president of Anchor Concrete Products, Inc., Buffalo, spoke briefly concerning his company's installation of high-pressure curing cylinders. Some of the highlights of his presentation:

The three 10-ft. diameter by 89-ft. long cylinders, which are believed to be the largest in the entire industry, will cure 15,000 8-in. equivalents per day. Two 7-ft. diameter autoclaves will also be installed for use in connection with cellular concrete, and as a cushion for concrete unit production until more of the large cylinders can be placed in service.

The large cylinders are equipped with Blaw Knox quick-opening doors, and steam is supplied by a 600-hp. water-tube, bituminous-coal-fired boiler which has ample capacity to pressure cure 40,000 units per day. The company will coninue to use the 108-block racks which were placed in service when the present plant was built several years ago. These racks make it possible for one lift-truck operator to take care of the output of three high-production block machines.

Anchor is telling architects and contractors in its marketing area that the autoclave installation represents an investment in improved quality alone, and that the new facilities will not increase plant output by so much as a single block.

● Officers of the association, left to right (standing), Ralph E. Cromis, Henry DeGeus III, Elmer E. Coats; (seated) Leo J. Ryan and Dale Cobb.

AUTOCLAVES AND DOORS

A paper on autoclaves and doors was read at the St. Louis meeting by Noel Harter, Harter Marblecrete Stone Co., in the absence of the author, John K. Selden, University of Toledo. Some of Mr. Selden's comments are summarized below.

The door is the heart of the autoclave and represents in most cases about half the total cost. High door cost has led designers to call for excessively long cylinders, which have a tendency to reduce continuity of operation as well as efficiency of heat utilization.

Autoclaves under pressure are like bombs, and must be handled with respect and intelligence. Most explosions have been due to carelessness on the part of operators in opening doors. The safest door is one which cannot be opened under pressure even by a moron or a saboteur, and which will blow steam readily unless it is properly sealed and locked.

Although several purchasers have found it economical to buy doors from one company and have shells fabricated by a nearby code welding shop, there is some advantage in purchasing complete autoclaves from one of the large concerns which has more experience in this exacting field of manufacturing.

UNIT MASONRY PROMOTION

Elmer R. Coats, immediate past-president of the Unit Masonry Association of Washington, gave a brief account of the formation of that organization and a description of its aims and achievements. Some of the facts brought out by Mr. Coats:

The organization was formed by a working committee consisting of 3 representatives from the mason contractors, 3 from the bricklayers union, 2 from manufacturers of brick and clay products, 2 from manufacturers of concrete products, and one each from producers and suppliers of mortar, stone, glass blocks, and scaffolding equipment.

Key points of the association's program include activities such as the following, designed to secure public recognition: the conducting of apprentice brick-layer contests; the preparation of a unit masonry "idea book" for distribution to architects, engineers, and the public; acting on building code revision committees; and the development of a unit masonry design competition among architects and architectural students.

Although some elements of the program are just getting under way, the association has already made substantial progress in encouraging wider use of masonry materials, and has made definite strides toward the achievement of harmony and better understanding among labor, management, contractors, and the general public.

EFFECT OF SILICA FLOUR

A paper entitled *The Effect of Silica Flour in Autoclaved Portland Cement-Sand Mixtures* was presented at the St. Louis meeting by Ralph L. Barbeheun, technical director, Asbestos-Cement Products Association. The research work which was the basis of Mr. Barbeheun's report was undertaken for the South River Sand Co. and the National Pulverizing Co. The following statements are quoted in part from the author's summary:

The test data developed in the study show that the use of a properly selected and ground silica flour is highly desirable, even when relatively fine sands are used as a part of the commercial aggregate. Strength gains amounting to better than 50 percent over the normal cured materials were secured, and commercially such gains can be obained with a lower raw material cost. The raw material cost may be reduced further if manufacture is to a specified strength based on normal cured products.

The size grade of the silica flour is not particularly critical, but it should apparently provide not less than 70 to 75 percent passing a 200-mesh sieve. The purity of the silica flour, in terms of available SiO_2 is important. The use of low siliceous materials resulted in lower strength. Since silica flour furnishes almost 100 percent available SiO_2, a more efficient and complete reaction is obtained with this material.

The general advantages of autoclaving with saturated steam at pressures above 100 p.s.i. are already well known. They include rapid turnover of inventory in process; better strength with more efficient use of the portland cement; a harder product more uniform in color and quality, and more easily handled; and a markedly better dimensional stability against changes in absorbed moisture.

This study was limited to mixtures of portland cement with sand as the aggregate, plus silica flour, fly ash, or powdered glass. No attempt was made to examine the various lightweight aggregates commercially available. It is already known from the excellent studies by others that products made using these aggregates have a strength that reflects the relative strengths of the aggregates themselves.

CURING COSTS

A discussion of the cost of autoclave curing in comparison with the cost of high-temperature curing was presented by Ralph E. Cromis, Boice Builders' Supply, Pontiac, Mich. Mr. Cromis made it clear that his figures apply uniquely to his own plant.

The subject plant was described as a dual plant—one which was changed over gradually from sand-lime brick production to concrete masonry units. Facilities include two high-pressure boilers, two block machines, two independent curing setups, and two cubing arrangements. For high-pressure curing there are two 7-ft. by 75-ft. autoclaves and two 6-ft. 6-in. by 59-ft. autoclaves. High-temperature facilities consist of three 7-ft. 6-in. by 87-ft. steam rooms, these having a total capacity of 5,600 units, compared with 4,800 for the cylinders. The autoclaves have 2 in. of plastic insulation and are under covered storage sheds. Steam rooms are of ordinary block construction, are exposed to the weather, and have doors at only one end.

A four-year study of curing costs with the two systems, assuming the same labor cost for either method of curing, revealed the following comparison:

Item	High press.	High. temp.
Overhead (per 8-in. equiv.)	$.0043	$.000825
Fuel cost (per 8-in. equiv.)	.0050	.0021
Cement saving (per 8-in. equiv.)		.004
Total (per 8-in equiv.)	.0093	.006925

According to the speaker, the additional ¼-cent cost of the autoclave unit is recovered by allowing a smaller trade discount on this item.

● Members and guests of the Autoclave Building Products Association posed for this informal photograph during the organization's 40th annual convention at St. Louis last month.

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1/4"—18" x 18"	1/4"—18" x 19"
5/16"—18" x 22"	5/16"—18-1/2" x 18-1/2"
1/4"—18" x 22"	*OTHER SIZES ON REQUEST*

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Compression Testing For Profit

By W. C. REID
Forney's Incorporated

THERE is a common tendency among plant owners and operators to confuse the quality control compression testing equipment designed for use in the plant with the much more expensive and delicate laboratory equipment designed for use under laboratory control conditions. The result is an expectation that plant testing will eliminate laboratory testing, and that the savings that can be expected will only approximate the expense of outside testing—an insignificant amount at best.

Actually, plant quality control equipment and procedure has little in common with laboratory equipment and procedure; and actually neither one can displace the other. In effect, each has a separate and valuable function, and the modern plant owner and operator needs both.

Briefly, laboratory tests are to provide certified reports by disinterested and highly qualified experts. They have two major functions: one is to provide the reports which are required as a regular and well-established trade practice; the other is to check plant procedure periodically. If quality control testing equipment is used in the plant, the outside tests will check its accuracy also.

Quality control, or plant testing equipment, has an entirely different function. It is designed to be used out in the plant by plant personnel, and its purpose is to maintain controls which will keep costs, insofar as cement and mix ratios are concerned, to the practical and profitable minimum. It is also used to maintain daily quality control insofar as compression testing is concerned.

Laboratory testing is a necessary procedure which *costs* money. Plant quality control testing is an optional procedure which *makes* money.

The plant owner confronted with such statements is likely to want to know how plant testing equipment can control quality any better than laboratory testing, and how it can be made to pay for itself and show a profit. These questions can best be answered by asking some:

Why is it, for instance, that with an A. S. T. M. code requirement of 1,000 p. s. i. for Grade A hollow load-bearing units and with local codes often much lower, so many manufacturers year after year make blocks which consistently test over 1,800 p. s. i. and quite frequently over 2,000 p. s. i., which is up to or exceeding A. S. T. M. requirements for solid load-bearing units? Why such a tremendous margin of safety over and above a code requirement, which already contains a reasonable margin of safety?

In talking to many hundreds of plant owners and operators, the answers often run something like this: "We've been making blocks like this since I was a kid and never had any trouble"; or "Our blocks test higher than anybody else's and that's the way we want them"; or "We can tell how strong they are by tapping them with a hammer. What use would we have for testing equipment?"

When such statements come from plants which are making over a million blocks a year and where, on such production, a saving of even a few mills per block can run into a lot of money, it is evident that the idea of compression testing in the plant for profit needs explanation. We know of a specific instance which fits this pattern—even to the hammer test; it's not a big plant; in fact, it's small compared with some. Here in a nutshell is the actual picture:

For years the average yield was 80 blocks per barrel of cement; the average consumption was 10,000 barrels a year. The blocks produced tested at between 1,800 and 1,900 p. s. i.—a figure far above both A. S. T. M. and building code requirements. After installing plant testing equipment and setting up a simple control procedure, the cement was reduced and the mixes adjusted until the blocks tested 1,400 p. s. i. or slightly over (still a comfortable margin over both A. S. T. M. and building code requirements). On this basis, the yield per barrel went up to 90 blocks and has remained there for several years. It's simple arithmetic to figure the annual savings which this increase of ten blocks per barrel made possible, and the same figures show the loss that this plant had been sustaining for several years prior to the change. It's equally simple to see that the total cost of testing equipment and of setting up the elementary control procedure was a drop in the bucket compared to the savings effected.

While this is a factual instance, it's quite obvious that all plants may not be able to increase their yield by ten blocks per barrel. Some may increase only one or two blocks per barrel, but the fact remains that almost any plant operating one or more automatic block making machines, can effect very substantial savings over the period of a year—even though they increase the yield by only one or two blocks per barrel.

Aside from the reasons given above for making blocks which test so far above code requirements, it appears that another and perhaps the most important reason is the desire to be well on the safe side because compression tests, even if run once a week, constitute a test of such minute percentage of the daily or weekly production that operators are willing to sacrifice some of their profit in order to err on the side of overstrength rather than under-strength.

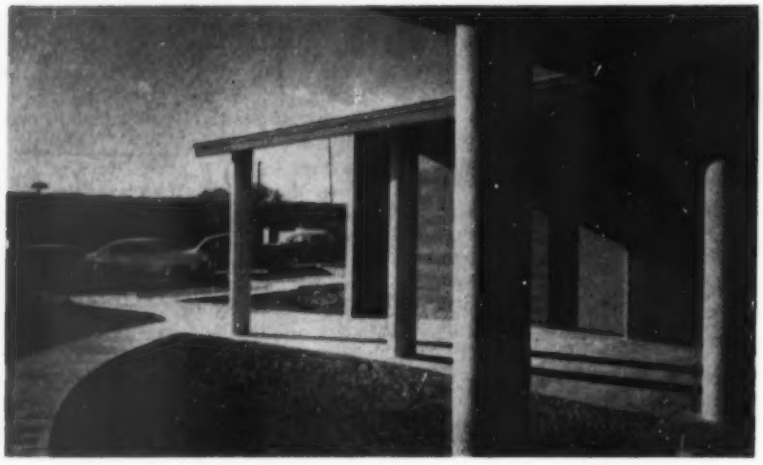
A properly operated plant compression testing setup permits compression testing to be done every day on the previous day's production. Hence, it becomes utterly impossible in the event of mistakes or carelessness for the plant to produce more than one day's run before the error is caught and corrected. This fact can be important even in the small plant producing a 1,000 blocks per day. And it becomes extremely important in the larger plants which produce many thousand blocks per day. In this respect alone, plant compression testing equipment can be, and is, exceedingly low-cost insurance against errors.

How is such a procedure set up? A very simple method is to make up record sheets and then run tests on a series of five sets of six blocks, each from the same day's mix. These are tested in batches of six after one day, one week, two weeks, three weeks and four weeks, and the procedure is repeated so that mixes of several different days are checked. The resultant figures, averaged out, give simple standards by which it becomes routine thereafter to run a compression test every day on the previous day's run, and to know within very close limits, what each day's production will test at any point up to and including 28 days.

Here is simple and very effective quality control that enables plant owners and operators to know with

(Continued on page 193)

Unusual Techniques Featured In Change House Built of Concrete



A 6,500 square-foot structure incorporating several interesting and unusual applications and techniques in concrete construction has been completed at the Riverside Cement Company's Oro Grande plant, five miles north of Victorville, Calif. The $95,000 "change house" building, the interior view of which appears on the front cover of this issue, was built to provide locker, shower, and toilet facilities for the more than 300 workers employed in three shifts at the plant. The structure was designed by the Los Angeles architectural firm of Allison and Rible.

Because of the area's extremely rigorous temperatures, which range from 10 deg. F. to 125, and the physical discomforts and hazards occasioned by the nature of the work, the Riverside Cement Company desired exceptionally well-equipped and hygienic changing and clean-up quarters for its employees.

Cement was selected as the basic building ingredient for several reasons. One, of course, was the weather. In addition to the wide variations of temperature, the area's humidity ranges from 0 percent to 5 percent and up, and winds of 100 m.p.h. velocity are not uncommon. Because of the extreme heat and dryness, wood construction was deemed unwise. Added to these reasons was the fact that cement for the project was easily obtainable and economical.

A the same time, it was a matter of pride with the Riverside Cement Co. actually to utilize the various methods by which its product could be used in construction.

Four different types of cement materials went into the building—concrete cast in place, precast concrete structural members, stained cement floors, and concrete block. Columns, girders, and joists were cast on the ground and lifted into place by means of cranes. The same procedure was followed with wall tilt-up panels, which are specially textured.

The wall columns were poured after the wall sections were in place, giving a homogeneous panel construction about 6½ in. thick. The columns were 5½ in. deep. Although these sections may seem thin, additional strength was gained by close control of contruction techniques and by the use of steel reinforcing members.

Specially-designed lips on the edges of the roof joists supported the forms which permitted pouring the diaphragm of slabs without the aid of additional shoring or supports. The forms were removed when the roof was completed.

The walls of the main building are composed of poured concrete panels, while the walls of the smaller adjoining building for superintendents and foremen are formed of concrete block with alternate 4-in. and 8-in. thicknesses. The exposed exterior columns were poured into pressed paper forms, and most larger members were cast in wooden forms.

Weights of the precast members varied from 1,500 lb. (the approximate weight of a roof joist 19-ft. long, 5½ in. thick, and 14 in. high) to 8 tons, the approximate weight of a 10- by 20-ft., 6-in. thick wall panel.

Accents on the exterior of the building are painted; the columns of the main unit and the smaller adjoining building are a turquoise blue-grey. The panels are left in natural concrete color, while the columns and overhangs are finished in a peach shade.

The lockers, enough to provide for 250 workmen, about 20 supervisors, and 30 foremen, are oversized, ventilated units. Dressing benches are fastened to the concrete base of the lockers and are not supported by the floor, thus facilitating the hosing down operation.

Special consideration was given the areas which will be subjected to the greatest wear and abuse. Grey Tennessee marble was used on the dividing walls between the shower stalls and the toilets. The floors are colored and treated with non-skid wax. No plaster was used anywhere in the building.

Steed Bros. of Alhambra acted as the general contractors on the facility; Ropp and Ropp of Los Angeles were the structural engineers, and Lester Kelly of Los Angeles was the mechanical engineer.

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Compression Testing—

(*From page* 191)

absolute certainty that each day's production is right up to standard, and that the cement ratio is kept at the most profitable level. They can predict within very close limits the results of any required laboratory tests and they can easily reduce the useless and unnecessary margin of safety for which they pay a high price, but for which they do not receive a premium price.

Looked at in this light, the entire concept of compression testing in the plant undergoes a radical change. It is no longer a question of trying to justify the purchase of plant testing equipment from the savings which might be effected in the event of its eliminating the need for outside laboratory testing. It becomes, instead, a question of justifying the purchase of plant testing equipment from the impressive savings it can effect if properly used, and from the absolute control it gives over possible error and carelessness. Actually, plant testing equipment need have no effect whatsoever on any outside laboratory testing procedure. Each can work efficiently independently of the other; and each can function quite effectively as a check.

Ready Mix—

(*From page* 175)

handling of the concrete served as agitation; of course, some water was added, but the mass was kept plastic. Some loads received more water, and all were agitated in the dumping onto the sub-grade and the subsequent spreading. The last load arrived about 6 p.m., about ten hours after the first of the ready-mix and eight hours after the last had left the mixing plant. Some 25 cu. yd. (roughly 75 percent) of the concrete had been retrieved.

An inspection of this driveway some 15 years later, after it had carried heavy daily traffic, revealed that the concrete was in excellent condition. Use of the recovered concrete to construct the driveway was an extreme case of delay in final placement; the quality of the concrete had been reduced markedly by the water added to keep it workable. Such severe abuse is not to be recommended; but the experience indicated that there was no death-knell for the "usability" of the concrete at 30, 45, or 90 minutes, or even ten hours after mixing.

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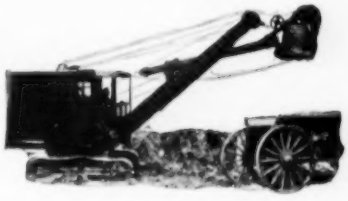

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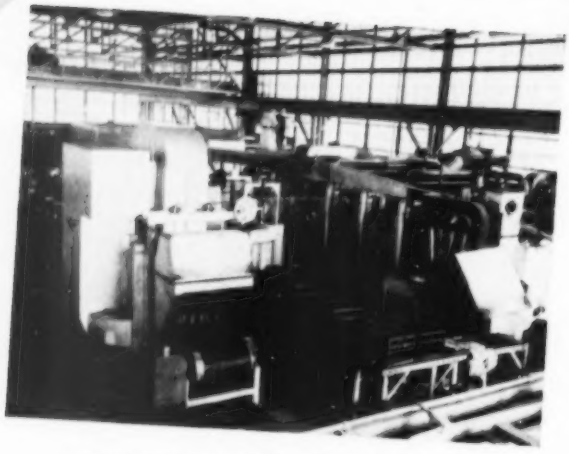

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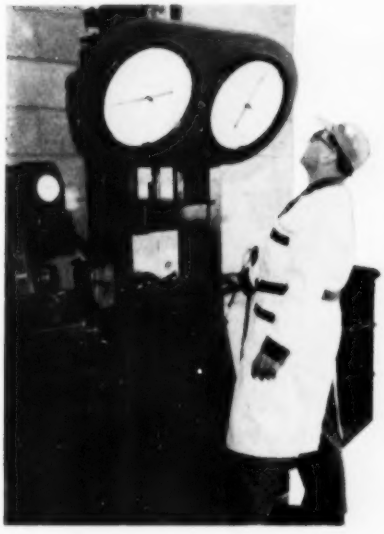
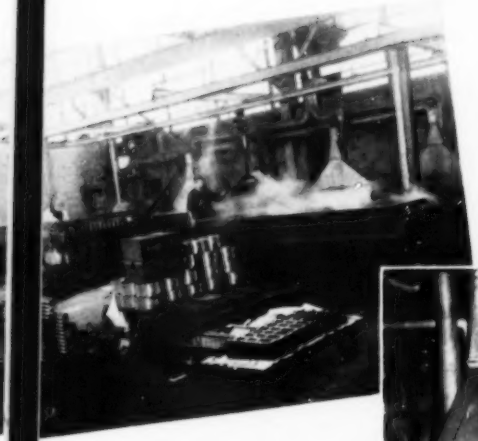
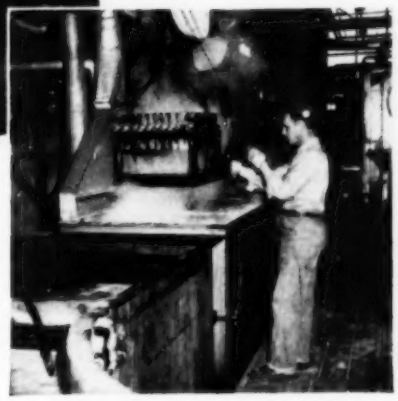
All heat treated parts are 100% inspected for case depth and hardness on the latest type Rockwell, Brinnell and Sclerescope Machines.

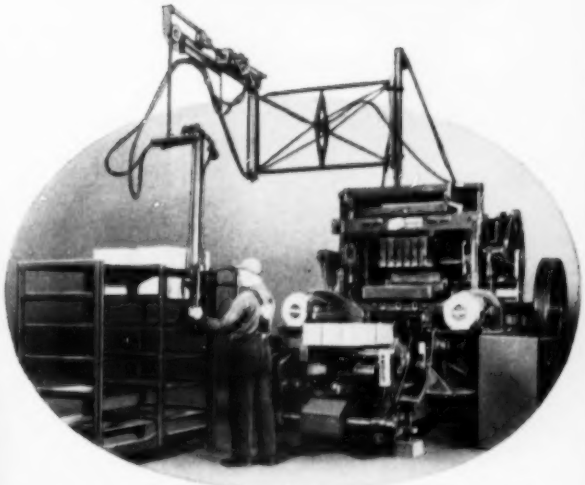




Parkerizing operation showing process of rust proofing of GENUINE BESSER PARTS, produced by acid etching and oil bath. This is a licensed process approved by Army and Navy Ordnance.



Charging Parkerizing Vat with Division Plates.



Besser Front Pallet Feed Vibrapac equipped with power off-bearing hoist. Produces ALL types and sizes of block on one set of Plain Pallets. No manual lifting. Off-bearer merely guides the power hoist.

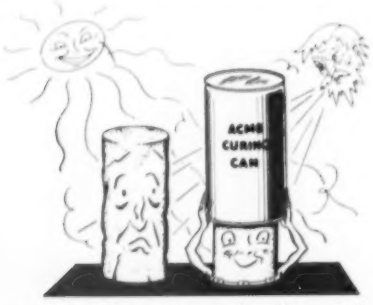
Concrete Masonry Progress

J 3445

New Machinery and Supplies

● Cures Test Cylinders

An inexpensive piece of equipment for the field curing of concrete test cylinders, the *Acme* Curing Can, has been developed for use in all weather conditions. The specially designed



container has an insulating liner and functions like a thermos jug to provide controlled humidity and temperature. It is highly absorptive, acquiring from two to four quarts of water with a 60 percent retention at seven days

Our Identification No. 101

Jones **COMPRESSION TESTING MACHINE**

for more economical mixes, and uniformly higher strength

By doing your own testing of concrete blocks and cylinders, you will immediately discover anything which may have gone wrong with the aggregate, grading, mixing, etc. This will help you maintain more uniform quality and develop more economical mixes. The Jones (formerly Yoder) testing machine is low in first cost, specially designed for concrete products plants.

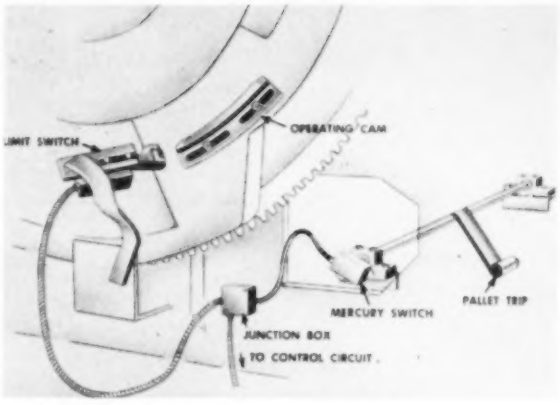
Send for list of satisfied users and literature.

J. A. Jones **CONCRETE MACHINERY**

8 Horning Road, Pittsburgh 34, Pennsylvania

● This pallet skipping automatic stop has been devised for block machines by Bergen Machine & Tool Co. If the pallet moving lug links fail to bring a pallet forward, the machine stops automatically. The device will even detect a pallet coming forward out of line, Bergen says.

Our Identification No. 102



● Revolution Counter

Developed at the request of the ready-mixed industry, an electric counting device for RMC trucks is said to improve control over con-

● Electric ready-mix truck revolution counter.

crete mixed in transit. A counter switch mounted on the truck frame records the revolutions of the drum and registers the count inside the cab on the dashboard. It operates on six or 12-volt dc circuits, and is not affected by dirt, water, shock, vibration, temperature, etc. The *Micro Switch* unit is available as a package for installation on trucks now in service.

Our Identification No. 103

● Repels Water

Solvent-base and water-base silicone water repellent products for masonry and other structural materials developed by *General Electric* include SR-53, a resin in solvent, and SC-50, an alkaline water soluble material. They cure to form highly polymerized structures without the application of heat. Silicone treatment is beneficial in extending the useful life of the material by increasing weather resistance, by reducing spalling, cracking, efflorescence, warping and crazing, and by maintaining a cleaner surface and a lower thermal conductivity.

Our Identification No. 104

● Good Will Item

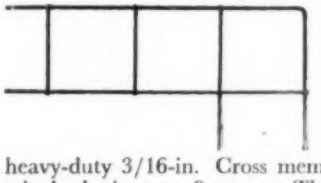
A time-saving block projection scale for the planning, designing, computing and estimating of structural tile and block walls using modular 8-by-16-in. units is offered as a business builder by *Palmer Mfg. Co.* Imprinted with your name, the 14-in. long scale is furnished in a mailing envelope to match it. Scales are printed on both sides and are coated to resist smudging.

Our Identification No. 105

● Masonry Reinforcement

Several advantages are offered to masonry wall reinforcement users by a new product, Blok-Lok. The reinforcement, comprising parallel rods joined at intervals by cross members, features a flush welding technique. This is said to produce weldments five times stronger than butt welding, and to reduce bulk from overlapping.

The parallel rods are furnished in two diameters—standard 9 gauge



or heavy-duty 3/16-in. Cross members in both sizes are 9 gauge. The steel has 100,000 psi tensile strength, and is furnished in brite basic, galvanized and hot-dipped galvanized. Sizes are available for walls of any thickness, with the recommendation that Blok-Lok two inches narrower than the wall be used.

The simplicity of the Blok-Lok design results in considerable savings in steel and freight rates, say its developers, *AA Wire Products Co.* It is furnished in 10 or 12-ft. lengths in bundles of 25. A special corner assembly design eliminates overlapping of rods, doing away with thick masonry joints and saving the mason time and effort, AA says.

Our Identification No. 106

Trade Literature

Kiln Doors that can open and close in seconds, using a ratchet operated locking ring instead of bolts, are described in this *Blaw-Knox* bulletin. Furnished in any diameter for pressures to 250 psi or higher, these doors can be welded onto existing concrete curing kilns.
Our Identification No. 107

RMC Trucks. Facts to help you increase operating efficiency in the transportation of ready-mixed concrete are featured in this folder about the new *White Motor* six-wheeler trucks.
Our Identification No. 108

Concrete Voids can save you steel, concrete and money, this *Sonovoid* bulletin declares, giving design tables and data on the use of low cost, laminated fibre tubes designed specifically for reinforced floor, roof, wall and bridge deck slabs.
Our Identification No. 109

Bulk Weighing is described in this folder about *Hardy* suspension hopper scales, fabricated to meet specific requirements in dry or liquid bulk handling up to 60,000 lb. Custom designing at no extra cost is assured by a choice of beam boxes and dials, available with or without hoppers.
Our Identification No. 110

Shrinkage Problem? Any undesirable shrinkage in concrete at the initial set can be compensated for through the use of a metallic aggregate (combined when manufactured with a plasterizing material, a cement dispersing agent and a catalyst), *A. C. Horn* says, introducing Vibro-Foil for use in resurfacing, patching, bonding, grouting, etc.
Our Identification No. 111

Curing Vessels used for concrete autoclaving can be fabricated in any size and type by *Gussett Boiler & Welding*, whose facilities and services are described in this folder.
Our Identification No. 112

Feeding Devices used for control materials for quality concrete—dispensers for calcium chloride, air-entraining agents, etc.—are described in this *J-W Materials* bulletin.
Our Identification No. 113

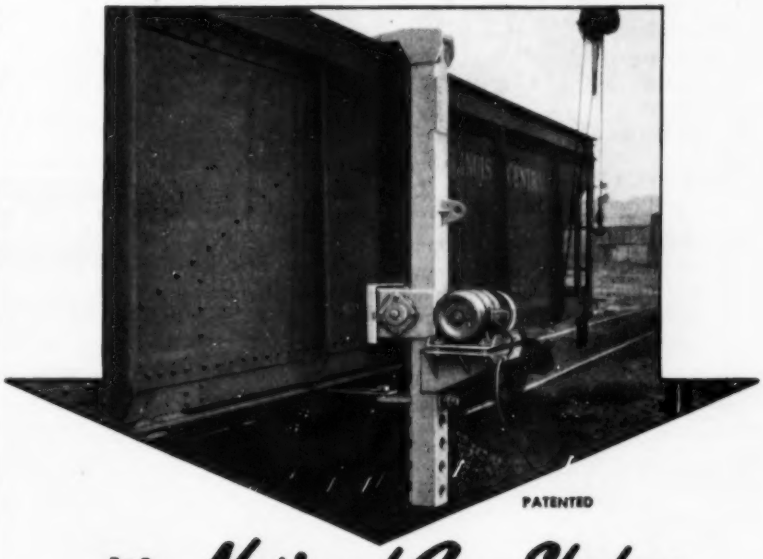
Sell Chimney Molds. Concrete chimney blocks made with *Tyra* block molds can be laid up by one person—even a woman—this bulletin says. The molds make 16x16 and 16x20 block suitable for 8x8 and 8x12 flue lining.
Our Identification No. 114

The Care of Masonry Surfaces. Miracle Method products stop running water, seal the surface, beautify and protect it, says *Seddon Co.*, describing several paint products of interest to all who use concrete as a building material.
Our Identification No. 115

Silicones At Work. A technical brochure describing the theory, applications and benefits of special silicone resin water-repellent compounds for exposed masonry has been published by *Dewey & Almy*. It explains how silicones work to cut maintenance and preserve structures.
Our Identification No. 116

A Garbage Box made of segments of reinforced concrete is described in this literature from *Advance Cast Stone*. The "Alley King" ash box and waste receptacle can be made by you under a franchise agreement.
Our Identification No. 117

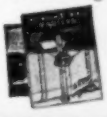
Quicker, Cheaper Unloading



with *National Car Shaker*

Hundreds of National Car Shaker installations have PAID FOR THEMSELVES through big unloading savings. Many users say that they save up to 80% on unloading costs!

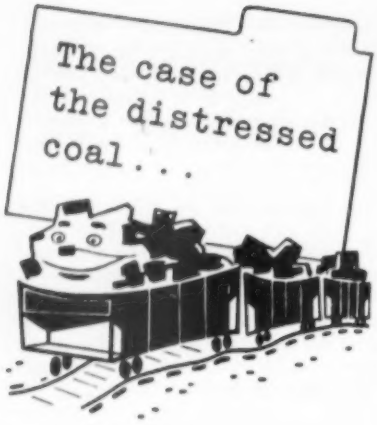
One man can unload coal, coke, cinders, sand, stone, aggregates or other bulk materials *in a few minutes*, under normal conditions. National Car Shaker eliminates the dangerous part of unloading work, as men are not needed in or on cars.



WRITE TODAY for full information, prices and descriptive literature on the LOW COST National Car Shaker.

National Conveyor & Supply Company

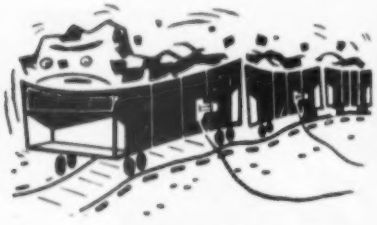
348 N. HARDING AVENUE CHICAGO 24, ILLINOIS



Recently we had a case like this in a Pittsburgh steel mill. Their coal was happy as a clam, just sitting back contentedly in the railroad hopper cars, refusing to budge.

The plant superintendent was hopping mad until we came to the rescue with a CLEVELAND vibrator.

The coal was distressed at being jolted into action. It *had* to move right along with production . . . and now the *superintendent* is happy as a clam.



Tell us your materials handling problem, or ask for our detailed literature.

Bin Stuck Lately?

THE CLEVELAND VIBRATOR COMPANY

2710 Clinton Avenue • Cleveland 13, Ohio

Block Pallet Cleaner. Block pallets are cleaned automatically as they are used with the Beals pallet cleaner diagrammed in *Springfield* literature.
Our Identification No. 118

A Precasting Machine for making any concrete shape that will strip through a straight box—lintels, slabs, guard rail posts, joists, channel roof and floor slabs, etc.—is desecribed in this *PreCaster* literature. It handles any aggregate, and makes units up to 10-ft. long.
Our Identification No. 119

Two-Hour Block Curing with the Consolidated duo boiler for saturated and super-heated steam is reported by block plants in this *Burkhart Engr.* literature. The new boiler principles are described.
Our Identification No. 120

Window Buck used for installing basement windows in poured concrete foundations cuts costs, eliminates leaky mortar joints at sills and jambs and gives a clean finish around the window, *Kewanee* says.
Our Identification No. 121

Curbing Forms. Metal forms for curbing, gutters, etc., are described in this *Binghampton Metal Forms* catalog sheet, with prices and specs.
Our Identification No. 122

Use of Concrete Forms. A veritable handbook of information on concrete forming equipment, safety shores, column clamps, etc., is found in this *Symons* catalog, valuable to all ready-mixed concrete producers.
Our Identification No. 123

Truck Mixer Models included in the new *Le Roi* Transo line are described in detail in this brochure. Various features are illustrated and specifications given for all seven Transos.
Our Identification No. 124

The Electronic Weighing of tanks, bins and hoppers is discussed in this *Baldwin-Lima-Hamilton* report. The SR-4 load weighing system provides a method for indicating, recording or controlling the weight of fluids or solids.
Our Identification No. 125

Poured Concrete Construction equipment made by *Gar-Bro* is described in this 32-page catalog. Carts, hoppers and batch plants, buckets, wheelbarrows, etc. are included.
Our Identification No. 126

Lift Truck Leaf Chain. Specially designed for lift trucks, this *Baldwin-Rex* leaf chain offers several advantages to the industrial truck owner.
Our Identification No. 127

enjoy PreCaster profits
from hard-to-make units like lintels

Be the first in your market to offer quantity production prices on concrete units that will strip through a straight box . . . slabs, highway guard rails, fence posts, joists, etc. *Relatively low investment! One man operation!* Write PreCaster Inc. · 5209 Beech Street · Cincinnati 17

$1,000,000 Pipe Contract Awarded to Price Brothers For Miami Sewage System

Price Brothers Co., Dayton, Ohio, producers of concrete products, are manufacturing $1,000,000 worth of sewer pipe at their temporary plant in Coral Gables. Fla. The high pressure steel and concrete pipe will become a part of a $23,000,000 sewage system at Miami, Fla.

Price Brothers established the Coral Gables operation about 14 months ago to manufacture eight miles of 48-in. pipe for Florida water mains. Harry J. Price, executive vice-president, stated that the company hopes to make the new plant a permanent installation.

The contract on which the company now is working at Coral Gables calls for three miles of pipe in 32-ton sections. Made of steel cylinders, coated inside and out with concrete, the pipe is the heaviest Price Brothers has ever built. Inside diameter of the pipe is 72 in.

R. G. Hughes Named President Of Natl. Home Builders Assn.

R. G. Hughes, Southwest builder and developer, has been elected president of the National Association of Home Builders, which now has 29,000 members.

R. G. Hughes

As a member of President Eisenhower's Housing Advisory Committee, Mr. Hughes will lead the industry's campaign for more homes for lower and middle-income families. He hopes that the industry can build up to 1,400,000 new homes and rehabilitate and recondition at least 600,000 more.

Short Courses on Concrete Popular in Many Localities

Short courses in the manufacture of concrete are "busting out all over", it seems. Here are a few samples. During January a three-day session was held at the University of Cincinnati under the auspices of the Ohio Ready Mixed Concrete Association and the university. R. P. Mumford, Springfield, Ohio, was chairman of the association's short-course committee. Lectures, laboratory sessions, motion pictures, and inspection tours made up the curriculum.

Fort Dodge, Iowa, producers were interested participants in a quality concrete short course held in that city on January 19. M. D. Blue, P.C.A. district structural engineer, spoke on the placing and finishing of quality concrete.

At Stillwater, Okla., members of the Oklahoma Ready Mix Concrete Association attended a three-day "school" on the Oklahoma A and M College campus during the first week of February.

"A short course in concrete problems" was the description of a conference held on two successive evenings for interested members of the industry in San Angelo, Tex., on February 15 and 16.

M.I.T. Offers Summer Course On Thin Concrete Shells

A three-day conference on Thin Concrete Shells, on June 21, 22, and 23 will be a part of the 1954 Summer Session at the Massachusetts Institute of Technology.

The conference, part of the most extensive program of special events in the history of M.I.T. summer activities, will be sponsored jointly by the departments of civil engineering and architecture. Full details may be obtained from the Summer Session Office, Room 7-103, M.I.T., Cambridge 39, Mass.

"BIG TIME" ADVANTAGES

IN THIS COMPACT AND RELATIVELY INEXPENSIVE

KENT SUPER BLOCKMAKER

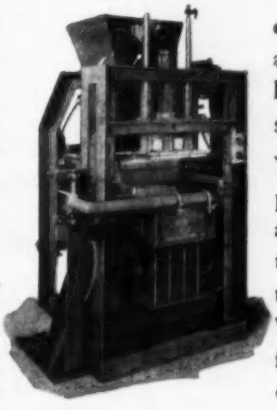
Here is an entirely new semi-automatic machine ideally suited for SMALL and MEDIUM block plants.

A SPECIAL air cylinder-powered press head makes possible a faster cycle and assures blocks of uniform height and equal density regardless of the material used.

PRICED BELOW any machine of comparable performance, the SUPER BLOCKMAKER consistently produces blocks at a rate of 5 per minute from any aggregate and has a peak output of 6 blocks per minute.

Equal delivery of aggregate to the mold box is effected by agitation and mold box vibration assures uniform block density.

A simple push of a button starts cycle during which various



operations are automatically handled in sequence.

You'll be surprisingly pleased at the comparative low cost of this machine. Write TODAY for illustrated circular.

The KENT MACHINE COMPANY

CUYAHOGA FALLS, OHIO

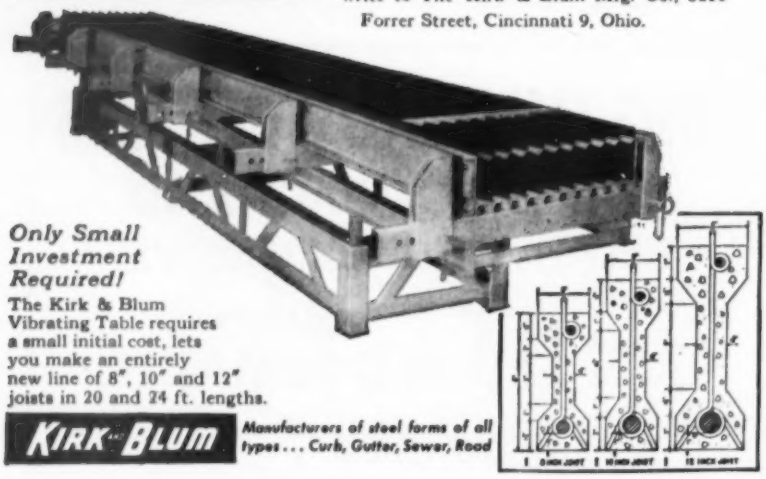
CONCRETE PRODUCTS MACHINERY SINCE 1925

Add a New Profit-Maker

Increase Your Volume

PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE . . .

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3210 Forrer Street, Cincinnati 9, Ohio.



Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.

KIRK and BLUM

Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

Servicised Products for concrete construction

concrete curing compounds

3 types:

- white pigmented
- clear
- separation (for tilt-up or pre-cast construction)

A complete line of concrete curing compounds from one dependable source—each type meeting all official specifications. White pigmented, Clear and Separation compounds available in several types to meet any requirement. Write for special Bulletin.

form oil concentrate

Can be diluted in any ratio up to 24 parts of water to one part concentrate . . . lower in cost . . . easier to handle . . . saves time and labor . . . is more flexible in the field. Harmless to skin and clothing . . . non-inflammable and resistant to freezing. Available in 5 gal. cans and 53 gal. drums. Write for special Bulletin.

air entraining agent

Servicised Air Entraining Agent is a liquid and can be added to gauge water or introduced into the mix. Provides greater control—more flexibility to meet individual specifications of air entrainment. Will not settle out in storage or gum the dispenser . . . is unaffected by presence of calcium chloride. Available in 5 gal. cans and 53 gal. drums. Write for Bulletin and details.

SERVICISED PRODUCTS CORPORATION

6051 W. 65th Street • Chicago 38, Ill.

Trade Notes

GoCorp Staff Changes

F. M. Cook

The following changes on the staff of the Gene Olsen Corporation, Adrian, Mich., were announced recently:

Forest M. Cook has been named assistant sales manager. Mr. Cook has been engaged in the firm's sales and auditing operations. Before joining GOCorp. he was sales manager and a vice-president of the Stearns Manufacturing Company, and at one time he operated a block plant.

Charles Perkins, who was formerly eastern direct factory representative for GOCorp., was appointed eastern representative, covering Connecticut, Massachusetts, Rhode Island, Vermont, Maine, New Hampshire, southern New York, and northern New Jersey. Mr. Perkins began his association in the assembly and hydraulics departments; subsequently he installed COCorp equipment.

Charles Perkins

Charles Ector

Charles Ector, former assistant sales advertising manager for the Fleming Manufacturing Company, is the new direct factory representative for GOCorp in Tennessee, Alabama, Georgia, and all of Florida except a few southern counties.

At Tucson, Ariz., the Concrete Products Company has been stepping up its output with a new $25,000 Model 12 Columbia block machine, which has a capacity in excess of 720 units per hour. It was stated that the new equipment is a part of a $40,000 expansion program which includes five steam curing rooms and a Francis steam boiler.

Botched Batches

Here's Mud in Your Truck!

WE knew things were pretty plush in the ready-mixed concrete industry but a little item from Sunnyvale, Calif., makes the point about as effectively as anything we've seen. In celebrating the opening of

a new ready-mix plant, the owner had his wife bust a bottle of champagne on one of the truck mixers as the first load was batched out. Oh sure, we know they *make* champagne in California, but the name will still have a prosperous ring to it, even when they start peddling the stuff through coke machines.

Devine Help

OUR "More Information Please" department has passed over to us a pamphlet entitled "Devine Impregnators" put out by the J. P. Devine Manufacturing Co. All things considered, we believe the best course we can pursue is to relay this news to our readers without comment.

Banned in Boston

TWO recently-published novels, *Corpus of Joe Bailey,* by Oakley Hall, and *The Passionate Land,* by Geoffrey Wagner, merit some attention from this department because their characters become involved, in one way or another, with important branches of the pit-and-quarry industries. The first item, which makes some of the racier passages of the recent Kinsey report sound like paragraphs from McGuffey's reader, devotes several chapters to the main character's brave struggles to become a successful truck dispatcher for a West Coast ready-mixed-concrete firm. Background and atmosphere are pretty authentic, although the impression is created that only a guy who is a cross between Jack the Giant Killer and Richard the Lionhearted stands even a fair chance of making the grade as a truck dispatcher.

The Passionate Land, to quote the *New York Times Book Review,* "concerns itself with a secret organization, The Pilgrims of Peace, whose aim is to seize political power and whose fanatical followers utilize the prime lever in carrying out their plans. An American girl, cast as a starry-eyed liberal, becomes the mistress of a Mexican mural painter, who is on the list of those to be purged. The British ambassador is stabbed in his sleep; a young Welsh widow gets amorously involved with an ex-Pilgrim, and the two business men plot to reap enormous profits from cement factories." We can't see that it matters a great deal, but these languid activities all take place in Mexico. If a high enough percentage of our eight readers should insist, we will seek permission to reprint these scholarly works serially on this page. Since neither of the books is much longer than the current issue of the Sears Roebuck catalog, we don't see why we can't polish off the whole job in approximately 60 years.

APRIL 1954

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110

111 112 113 114 115 116 117 118 119 120

121 122 123 124 125 126 127

Please send more information on products shown in the Advertisement on:

Page____ Product____ Adv.____

Page____ Product____ Adv.____

In addition I would like information on:

____

____

Name____ Title____

Company____

Address____

City____ Zone____ State____

Concrete Manufacturer Classified Section

431 S. DEARBORN ST., CHICAGO 5, ILL.

Advertising Rate Per Issue: $10.00 a Column Inch. Lower Rates on a Contract Basis — Write for Rate Card.

USED TRUCK MIXERS

1—3 Yard Rex Mounted on 4 x 6 Ford Truck	$1500.00
1—Dump Crete Size, 3 yard on 0-35 International Truck	500.00
1—Dump Crete Size, 4 yard	300.00
1—2 Yard Jaeger Mixer	300.00
3—3 Yard Jaeger Mixers	500.00
3—3 Yard Rex Mixers	1000.00
1—3 Yard Smith Mixer	1000.00
1—3 Yard Smith Mixer	600.00
1—1½ Yard Horizontal Jaeger Mixer	150.00
1—27S Rex Plant Mixer with Electric Motor	1500.00

All of these truck mixers are in usable condition, the prices are so cheap, you could own them for parts for some of your present fleet. The prices stated are as is and where is in our yard in Spokane.

ANDREWS EQUIPMENT SERVICE OF WASHINGTON, INC.
126 S. Walnut — Spokane 43, Washington

PAK-CRETE PRODUCES LOW WATER ABSORPTION BLOCKS

The Pak-Crete high speed Block & Brick machine has controllable tamping by the operator producing high test strength block 180 to 240 per hr. Blocks are so dense and strong that they are practically water proof without the use of any water proofing in the mixture. Various size molds to your specifications. Write for circular for further information.

Agents and Distributors wanted.

PAK CRETE SALES
3400 W. Adams St. — Chicago, Illinois

FOR SALE

Concrete Products & Ready-Mixed Concrete Plant. Located in one of the fast growing industrial areas of central South Carolina. It is equipped with late model Besser block machine, 6 mixer trucks, and all other handling & Delivery equipment. It is now in operation, and has been operated for 2½ years. A modern designed plant. Present sales approximately $450,000 per year, should certainly grow. Ideal size for Owner-Management. Reason for selling: Owner is Manager, also has other management duties in larger plants. Wishes to slow down due to age, etc. Will sell reasonable, terms if desired. Complete information furnished upon inquiry.

BOX NO. D-54, c/o
THE CONCRETE MANUFACTURER
431 South Dearborn Street — Chicago 5, Ill.

FOR SALE

1—Kelley Semi-Automatic Block Machine 2000 blocks per day capacity.
1—18 cu. ft. Mixer.
1—Farquhar 18"x17' Belt Conveyor with Motor.
1—25 cu. yd. Storage Bin.
1—Bucket Elevator with Motor.
1—Barrett-Craven Lift Truck with Charger.

We will sell all the above for $3000.00 or will sell in part. All the equipment listed is in perfect condition and can be seen at any time.

PISCITELL BLOCK CO.
143 West Brighton Ave. — Syracuse 5, N.Y.

FOR SALE

1—Kelly Semi Automatic Block Machine
1—Automatic Offbearer Mold Boxes 4" 8" 12" Racks and Pallets to make 2400 8" blocks per day. Some Pallets never used.
1—Kelly Mixer used about 1 year and extra set of new ni-hard paddles.
1—75' electric compressor.

MORSE C. & B. BLOCK, INC.
Route U.S. 7, One Mile North of Bennington, Vermont

READY MIX TRUCKS FOR SALE

1—2 yd. Smith Mixer, Waukesha Engine power, mounted on a 1948 International Single axle, recently repainted, good condition.

1—2 yd. Rex Mixer, Waukesha engine power, mounted on a 1948 International single axle, good condition, repainted.

1—3 yd. Smith Mixer powered with Continental Engine, mounted on International K-8F, tandem rear axles, repainted.

All priced right, ready to go.

FREDERICK G. SMITH & CO., Freeport, Illinois

LOWER COST
PACKER-HEAD WINGS
Proved to last as long or longer — yet cost considerably less. Write for prices.
TEXAS FOUNDRIES
LUFKIN, TEXAS

FOR SALE

One 3 yard Smith concrete mixer (4½ yard agitator) mounted on Ford F-8 truck in good used condition and operating in our fleet daily. We have too many 3 yard trucks and not enough 6 yard trucks. Will give reasonable terms if desired.

GRAYSON LUMBER COMPANY
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CEMENT COLORS

Write for free samples and prices of LANDERS CEMENT COLORS, produced in 14 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

manufactured by
LANDERS-SEGAL COLOR CO
71 Delevan St. — Brooklyn 31, N. Y.

FOR SALE

Rehberger Block Unloader—8 cube size, purchased October 1952, mounted on 1952 LF 210 tandem axle truck—used very little—both units in perfect shape—Price $8000.00

SUPREME CONCRETE BLOCK & PRODUCTS, INC.
P. O. Box 478 — Hagerstown, Maryland

FOR SALE

BESSER "VICTORY" VIBRAPAC
4", 8", 12" and Brick Attachments.
Air Offbearing Hoist.
2200 Plain Pallets, 12x18½.
18 Cubic Foot Stearns Mixer.

Write for further details.

PARK AVE. CEMENT BLOCK CO., Inc.
1350 Park Ave. — Cranston 9, Rhode Island

FOR SALE

Clark Fork Lift Mdl. 6025, late '45. Rebuilt engine, good solid tires. Overhead guard, new battery. Capacity 6000 lbs., Lift 14'0".
Price $1900.00

EDWARD R. GEE
P. O. Box 5575 — Philadelphia 43, Pa.
PHONE: GRanite 6-4790

1—Stearns Clipper Block Machine complete with
1—8" x 12" x 16" Mould Box
1—8" x 8" x 16" Rock Face Mould Box

W. J. ABRAHAM & SONS, INC.
8th & Pershing Sts. — Seymour, Ind.

WANTED

Stearn 28 ft. Mixer. Describe condition and clutch.

CONCRETE PIPE COMPANY
1933 West McDowell — Phoenix, Ariz.

FOR SALE

1—Dunbrick machine with motor, 2000 pallets, & 6 brick racks. All in good condition. $1600.00.
1—Champion Drain Tile machine with attachments.

CORALVILLE PRODUCTS, INC.
Iowa City, Iowa

BUILD GOOD WILL

Advertising necessities for the block industry. Line Pins, Twigs, Modular Coursing Stick. Also the new Block Calculator and Wood Corner Block. All imprinted with your advertising. Complete catalog on request.

GERSON CO.
97 Dearing Road — Mattapan, Mass.

YOURS TO SERVE

If you have not found the equipment you are looking for, the research dept. of The Concrete Manufacturer can and will gladly assist you. Tell us what it is . . . Write to

Research Dept.
C/O The Concrete Manufacturer
431 S. Dearborn St. — Chicago 5, Illinois

FOR SALE

1—DUNBRIK brick machine & motor
1—DUNN 16 CU. FT. MIXER with skip hoist & motor
1—Mat glazing machine
21—RACKS—5050 Pallets
Miscellaneous & spares with above
All to good working order
For information WRITE
SCHUYLKILL DUNBRICK CO., INC.
North 16th St. — Pottsville, Pa.

PRICED TO SELL

Concrete Block Plant including real estate. NOW in operation.
2—Complete machines, air operated.
2—Mixers, 2—Lift Trucks.
4—Steam Drying Kilns.
Outside conveyor and skip hoist.
Main Bldg. 40x40, Kilns. 40x35.
Lincoln Welder—36 Steel racks, 5000 Steel pallets.
500 Aluminum pallets.
This includes Franchise for Special stone faced color block.
1950 Truck—dual tires—flat bed.
All inventory and miscellaneous tools included.

P.O. Box 176, Station A
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FOR SALE

TWENTY (20) MODEL LJSW 1951 MACKS, 707 GAS ENGINES DUPLEX (10 speed) TRANSMISSION, 11:00 x 22 ROCK LUG TIRES, SPOKE WHEELS. TEN EQUIPPED WITH JAEGER 5½ cu. yd. MIXERS (7 ⅜ yd. Agitators), TWO HAVE 5½ cu. yd. SMITH MIXERS (7 ⅜ yd. Agitators), and EIGHT HAVE 6½ yd. SMITH MIXERS (8 ⅜ yd. Agitators). ALL MIXERS ARE SEPARATE ENGINE DRIVE.

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FORK TRUCKS
A REAL BARGAIN BUY

We have five Clark Fork Trucks, 4000 pound capacity, solid tires. Perfect running condition. A written guarantee with each fork truck. Each unit has a maximum height of 108 inches & collapsed clearance of 84 inches. We have a very desirable lease purchase plan on these Fork Trucks. Call or write

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Phone 4-7345 Night 2-9389
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P. O. BOX 452
SIOUX CITY, IOWA, U.S.A.
Concrete Pipe Forms & Vibrators

STOP *that* WATER

With FORMULA NO. 640
A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.
HAYNES PRODUCTS CO., OMAHA 3, NEBR.

FOR SALE

2—Model HA Hough Payloaders on good pneumatic tires. ½ yd. bucket. Excellent condition. $875.00 each.
1—Model HDL Hough Payloader, diesel engine, 1 yd. bucket, hydraulic dump, rebuilt throughout. $2950.00.
Blackhawk hydraulic lift truck on 4—9" rubber tires. Platform 2' x 6'. New. $175.00.
O. C. EVANS — Mt. Sterling, Kentucky

FOR SALE

Hyster Lift Truck 2 ton $1500.00
3 Phase motors 1 to 7½ HP.
Barret Lift Truck $75.00
25 ton Sand Hopper
2 Universal Block Machines $200.00 and $400.00
1300 Pallets to make 7⅝ x 15⅝ Blocks
400—10" Pallets
DONALD C. GLOSSEY — Phone 3848
ERNEST HORTON — Phone 2190W
PEKIN, ILLINOIS

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BESSER "SUPER" VIBRAPAC

With one attachment. A-1 condition. Priced to sell.

Friendship Block & Brick Co.
11800 PLEASANT ST.
DETROIT, MICHIGAN
Telephone: Vinewood 2-0200

MUST SELL AT ONCE

Stearns No. 50 Block Machine.
2" 3" 4" 6" 8" & 12" attachments.
Brick, Chimney and Manhole Attachments.
75-72 Block Racks. 2800 18"x18" Pallets.
500 never been used.
New Truckman platform Truck.
All in excellent condition. Can be seen in operation. Call me for price and particulars.
H. G. RAPLEY
931 Wall St. YUkon 20539 Port Huron, Mich.

WANTED

Used Block Machines, Mixers, Elevators, Pallets, or any other type of Concrete Equipment in any kind of condition. Interested in renting site or space for Block Plant.
BOX NO. C-37, c/o THE CONCRETE MANUFACTURER
431 S. Dearborn St. Chicago 5, Illinois

UNBREAKABLE
PALLET RINGS
Write for full information
TEXAS FOUNDRIES
LUFKIN, TEXAS

MINERAL COLORS
for
BRICK MORTAR
STUCCO-PLASTER-CONCRETE
"Fine Because of Their Fineness"
Ask for samples and recommendations.
BLUE RIDGE TALC CO., INC.
HENRY, VIRGINIA

Used Equipment For Sale

1—GoCorp Junior Block Machine, complete with 8" Attachment.

3—28' Stearns Mixers complete with motors, built-in V-belt drive and clutch, NiHard sectional liners and blades.

3—Truck-Man platform lift trucks (power driven).

1—Yale platform lift truck.

100—Chase 48-block capacity steel racks.

2—#9 Stearns Joltcrete Block Machines complete with all motors and controls and Attachments for making 4", 8" and 12" block.

1—Chimney Block Attachment complete with 1,000 16x16" steel pallets (square hole).

20,000—4" Commercial steel pallets, code word Zorilla.

4,000—8" Commercial steel pallets, code word Dacoit.

2,400—12" Commercial steel pallets, code word Hansom.

4,000—8" Commercial steel pallets (modular size), code word Caste.

2,400—12" Commercial steel pallets (modular size), code word Calk.

1—28' Stearns Skip Hoist complete with all motors and controls.

The following used block equipment located in Jacksonville, Fla.:

1—Syntro-Pac two-at-a-time Plain Pallet Block Machine equipped with all necessary motors and controls, including air type off-bearer and attachments for making 4"-6"-8"12" block, chimney block, brick and a number of specials.

1—28' Stearns Mixer complete with motor.

1—28' Stearns Skip Hoist.

60—60-block capacity steel racks.

1,725—¼x18x18" plain steel pallets.

This equipment is in excellent condition and is available for immediate delivery.

METROPOLITAN EQUIPMENT COMPANY
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Telephone Lawrence 6-1535

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Chairman of the Board,
Rockwell Manufacturing Company

"We feel the same way about our sales managers," Colonel Rockwell continues. "We expect them to know what is being printed in the business publications and to guide themselves accordingly. Further, we ask our salesmen to keep our home office informed about the comments of our customers on business periodicals."

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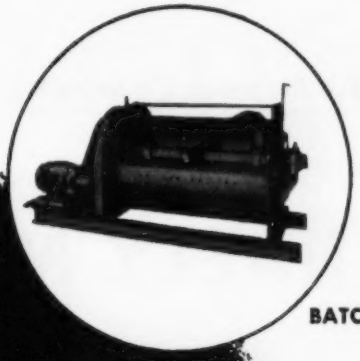

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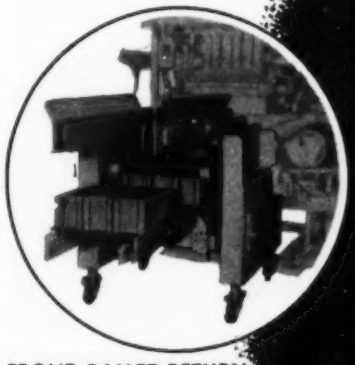
BERGEN

Precision Made

EQUIPMENT

for the

CONCRETE PRODUCTS INDUSTRY

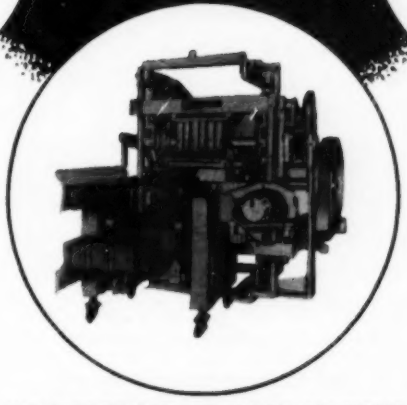


FRONT PALLET RETURN

SWEEPER

BLOCK TESTER

SKIP HOIST



HIGH PRODUCTION BLOCK MACHINE

Write for literature and prices or phone "Collect" . . . NUtley (N. J.) 2-7300

BERGEN MACHINE & TOOL CO., INC. 189 FRANKLIN AVENUE NUTLEY, NEW JERSEY

To a Ready-Mixed Concrete Producer

TIMELY MEMORANDUM

The construction industry and all industry—is now entering an economic period that has been aptly described as "dramatically selective." What does that mean to you and to me? Simply this: those people whose activities are wisely managed will maintain a sound business, even prosper—while those who take no heed of changing conditions, do not carefully analyze their position and operations, will find only economic stringencies as their reward.

Profit! Loss! Two of the most important words in a ready-mixed producer's language. So completely different in meaning, yet only a hairline apart. But how to analyze—and find that difference?

What one thing represents the greatest investment in your business? Transportation equipment! This, then, is the segment of your business where careful attention and study will turn up the most significant profit or loss figures.

Consider then: exactly what are your particular requirements? Legal maximum payload—operating conditions peculiar to your area—the degree to which you use your transportation equipment. These are the fundamentals of your problem!

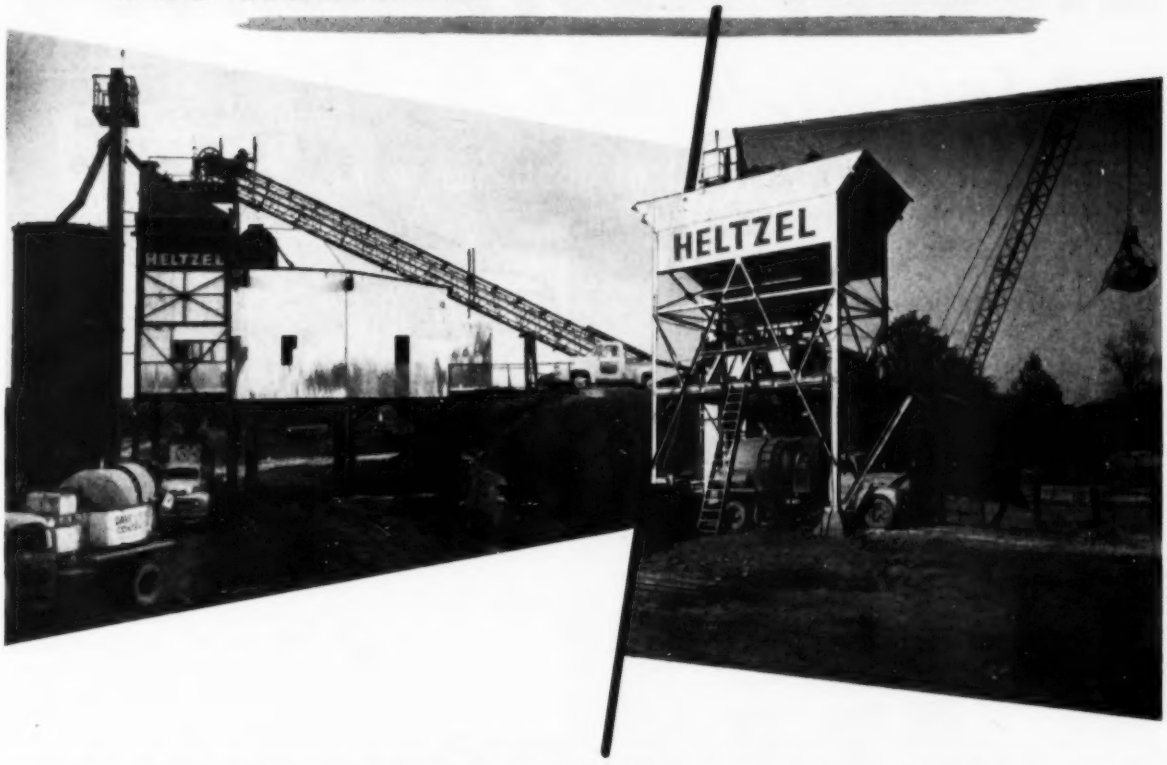
The answer? For each of you who reads this, there is a different combination of factors, varied local conditions, widely diverse individual opinion—a single answer would seem impossible.

But there is an answer.

It is the Rex® Adjusta-Wate principle that allows the greatest choice of truck chassis, the greatest choice in mounting the mixer, and the greatest choice in type of operation. Starting from this basic selection, Rex components can be added to bring you the exact "transportation package" that means more trips per day, more revenue per trip—the answer to the most profitable operations for you.

Within the framework of your transportation demands: legal maximum payload, local operating conditions, the degree of equipment use, over-all operating cost—yes, and first cost, too—your nearby Rex Distributor can help you find the answer you are looking for. Construction Machinery Division of Chain Belt Company, 4782 W. Greenfield Avenue, Milwaukee 1, Wisconsin.

The HELTZEL TYPE-TWO PLANT



BIG PRODUCTION *Where You Want It!*

This is no "Fancy Dan" piece of equipment. It's a big 200-ton capacity husky that can be quickly erected and dismantled, moved from job to job in large, easy-to-handle sections.

It's fast and accurate . . . no holdups or fouled batches. It's the big, versatile, hard-working plant designed to keep pace with modern concrete construction. It takes any type batcher, including the new Heltzel Automatic Push Button.

If you're in the market for big, high-production, portable equipment, check this **Heltzel Type-Two Plant** before you buy. It's available in the cement-aggregate design, or for aggregates alone. There are batchers, cement plants, elevators, conveyers—everything you'll need, designed to work with it.

THE HELTZEL STEEL FORM and IRON CO.
4400 THOMAS ROAD
WARREN
OHIO

Please send latest Batching Plant literature to:

Name_____

Company_____

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BIGGEST NEWS IN 1954

A Smith-Mobile that's

- **LOWER IN WEIGHT**
  Weight reduced nearly 1000 pounds
- **LOWER IN HEIGHT**
  Overall height reduced to get under bins with low headroom
- **LOWER IN PRICE**
  You save hundreds of dollars and still get top quality.

New PREMIUM Model

Contact your Smith dealer — today! Ask him for all the facts about this new PREMIUM model built to the usual Smith high standards of quality. Inquire about the cost. You'll be amazed how *much* truck mixer you can get for so little money.

The T. L. SMITH COMPANY
2887 NORTH 32ND STREET • MILWAUKEE 10, WISCONSIN, U.S.A.
Affiliated with Essick Manufacturing Co., Los Angeles, California

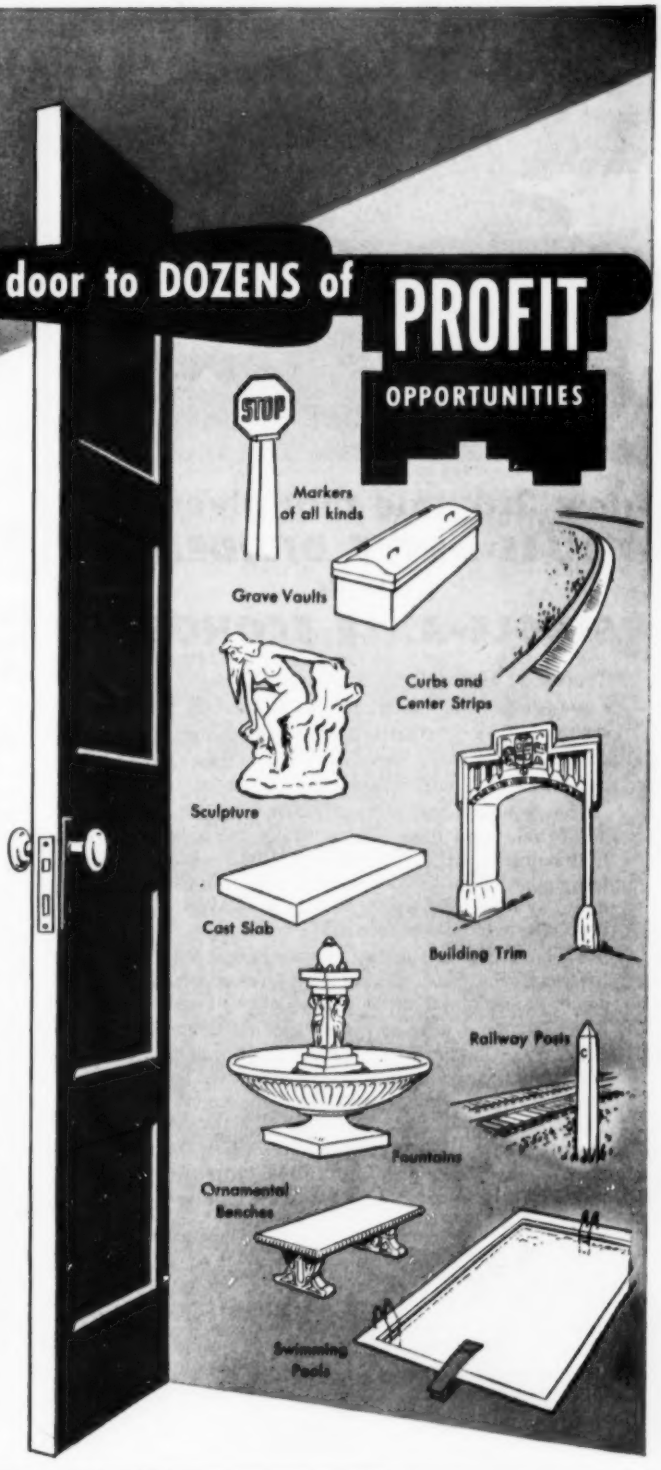
SMITH
T. L. SMITH CO. MILWAUKEE U.S.A.

CONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH

MEDUSA WHITE Portland Cements...

open the door to DOZENS of PROFIT OPPORTUNITIES



● Medusa White, the original White Portland Cement plain or waterproofed, white or tinted, actually opens the doors to an almost unlimited range of profit possibilities in the concrete products field. Those uses shown to the right are but a few. Wherever greater distinctive character and beautiful color effects are desired, whether it be in cast stone, concrete, cast slabs or any product that is made of concrete it can be made better and more beautiful with Medusa White Portland Cement, or Medusa Waterproofed White Portland Cement.

Now you can begin to see the tremendous sales possibilities for the concrete products manufacturer who utilizes Medusa Diamond-Blue, White (the original white) Portland Cement or its companion Medusa Waterproofed White Portland Cement for making his products. There is no end to the ideas that you can give your customers through the application of these cements to their building requirements. These cements are made by a company producing the finest in regular and special cements for over 60 years. You can rely on their integrity.

MEDUSA Portland Cement Company

1000 Midland Building • Cleveland 15, Ohio

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WHITE • WATERPROOFED WHITE • GRAY
WATERPROOFED GRAY • AIR ENTRAINING • HIGH EARLY STRENGTH • STONESET • BRIKSET
WHITE TILE GROUT CEMENT

MAKERS OF AMERICA'S FINEST PORTLAND CEMENTS FOR OVER SIXTY YEARS

Introducing

HYDRO-TRAC

new 3rd axle that gives DUAL-DRIVE DIVIDENDS WITH SINGLE-AXLE ECONOMY!

Truckstell Hydro-Trac gives you 3 trucks in 1 . . .

- 50-50 axle load distribution for greatest payloads
- 80-20 axle load distribution for maximum traction
- Trailing axle up for single-axle truck economy

. . . all in one low-cost, easy-to-operate unit.

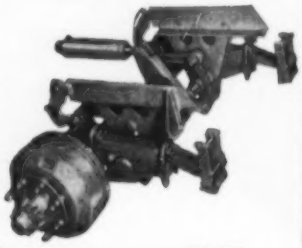
Here's how Hydro-Trac works. From its normal 50-50 axle load distribution, weight can be shifted hydraulically by cab-controlled pump which transfers up to 60% of the trailing axle's load to the driving axle . . . supplying up to 80% of a dual-axle drive's traction on ice, snow or muddy roads.

When truck is empty, Hydro-Trac's axle can be lifted off the road, saving tires and gas, providing easier steering and up to 20% shorter turning.

Hydro-Trac weighs much less than a dual-axle drive of equal capacity. This savings means greater payloads. In addition, its proven 4-point suspension cushions the ride, maintains axle alignment and perfect tracking for longer tire life.

Put Hydro-Trac to work on your new or used trucks now. Write today for full information and the name of your nearest Truckstell Distributor.

Hydro-Trac comes completely assembled with matching capacity tubular axle, hydraulic or air brakes, hydraulic pump and cab controls.



Truckstell

MANUFACTURING COMPANY

Union Commerce Building • Cleveland 14, Ohio

Makers of famous Truckstell Dual-Axle Drives, auxiliaries and other types of special truck equipment.

IT'S COMING!

the 1954 Edition of

CONCRETE INDUSTRIES YEAR BOOK

will be ready about May 1

Experienced Operators Turn to the Yearbook as the Final Authority

When new plants are built, when equipment requires replacement, or when existing plants require modernizing and expansion, experienced operators unfailingly turn to The Concrete Industries Yearbook for the know-how information they must have. Today, just as when it was first published 15 years ago, the Yearbook is absolutely unique in its field. And in every year since its inception the demand for copies has far exceeded supply.

Helps Solve Tough Production Problems

Established producers and newcomers alike will find in this bigger and better Yearbook a wealth of well-arranged, specific operating information to assist them in solving production problems and increasing profits. Plant design, the selection and characteristics of raw materials, batching, mixing, curing, handling and marketing are just a few of the important subjects treated.

- Order Now
- Our Supply Is Limited
- Do Not Be Disappointed

$2.00 Copy

MAIL THIS ORDER BLANK TODAY!

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431 S. Dearborn St.
Chicago 5, Illinois

For the attached check, send me.....copies of the 1954 edition of the Concrete Industries Yearbook.

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Firm.....

Street.....

City.....Zone.....State.....

"MY BUSINESS DOUBLED...IN 6 MONTHS"

SAYS MR. H. L. JONES... OF BOLIVAR, WEST VIRGINIA

H. L. JONES
BOLIVAR, W. VA.
CONCRETE AND CINDER BLOCKS
BURIAL VAULTS

January 27, 1954

Columbia Machine Works
Vancouver, Washington

Gentlemen:

I installed a new Columbia No. 8 fully automatic, with magnetic offbearer, pallet return, and cleaner and oiler on July 1, 1953.

Since then my business has doubled. Everyone using our blocks has been well pleased. I am more than pleased with the strength and type of block produced by this equipment.

Our daily average is between 500 and 600 8 by 8 by 16 block per hour.

I highly recommend this machine to anyone in the market for new and fast production.

Yours sincerely,

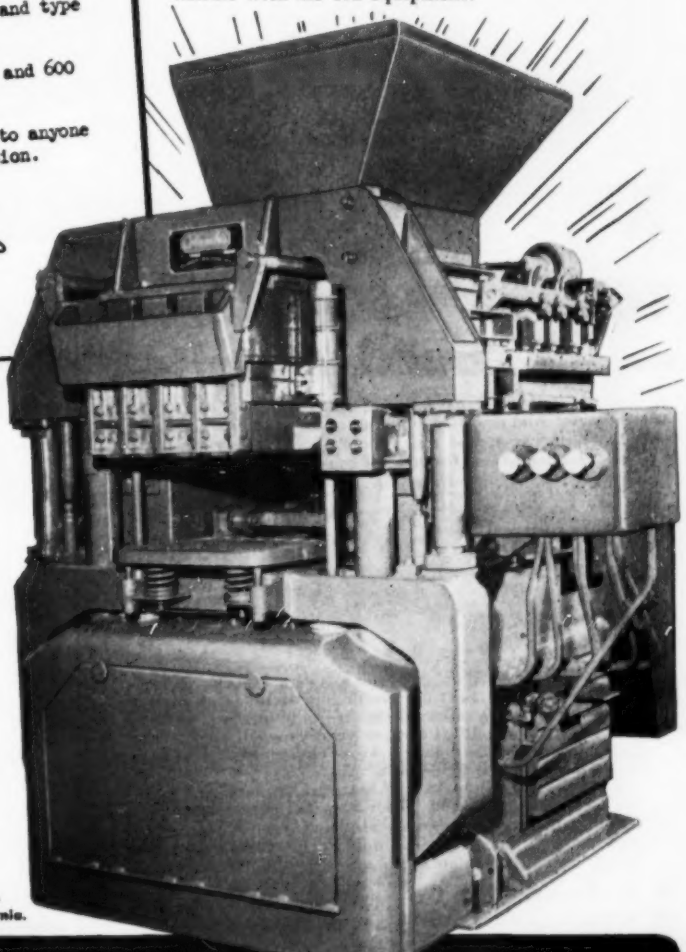
W. L. Jones

H. L. JONES, Owner

LLOYD JONES, Jr.

"OUR *Columbia* MODEL 8 BLOCK MACHINE TURNS OUT UP TO 600 BLOCKS AN HOUR..."

Like hundreds of other concrete block manufacturers, who have installed Columbia Model 8 two-block machines, H. L. Jones of Bolivar, W.Va. has discovered that he can get consistently high production of consistently high quality block. Installation of a single Model 8 fully automatic machine has enabled him to gain *twice* the volume of business that he could handle with his old equipment!



A *Real* PROFIT-MAKER

The Columbia Model 8 is the ideal machine for the block producer who wants fast, automatic production of high quality block. Look at these features:

- **4-6 Cycles Per Minute**
- **Fully Automatic Electronic Controls**
- **Vibration Under Pressure**
- **Standard Plain Pallets**

District Offices in: Wisconsin, Ohio, South Carolina, Mississippi, Florida, New Jersey, Virginia and California.

Columbia MACHINE

Home Office: 107 S. GRAND, VANCOUVER, WASHINGTON
Factory Branch and Warehouse at Mukwanago, Wisconsin

Write today for catalog describing Columbia line of one, two and three-block machines!

BES-STONE Block Splitter

Made in 2 Sizes — 18" and 24" Models — Produces 960 Split Block per Hour in Fast, Automatic Operation

Splits block in a straight line, with speed and precision and with the utmost safety. The block is placed under the knife automatically . . . the blade descends with a smooth, hydraulic action . . . and the split block is ejected by the incoming block. The operator is always at a safe distance. Machine is easily adjusted for various block heights. The 18" model, shown here, splits block 16" or 18" long, 1⅝" to 8" high. A larger 24" model splits any length up to 24", heights up to 8".

BES-STONE is a new masonry unit with a quarried stone appearance. Can be produced in many sizes and in a series of attractive, permanent colors. No conflict with conventional block. It complements and greatly increases sales of standard stripper block. Write for Bulletin.

BESSER MFG. CO. • Complete Equipment for Concrete Products Plants • Alpena, Michigan, U.S.A.

A 7571-½-H

To Build Modern . . . *without* Price Penalty . . . Build of Cavitex

Among today's home builders the swing is to masonry. And the ultra-modern masonry is Cavitex. With eye-appeal and price appeal, Cavitex has unusual interest for building contractors and owners alert to modern trends.

Cavitex is new—in size, proportion, design and color range. Cored-out design provides insulation values and saves weight. Easily the most practicable unit for cavity-type wall construction. Ideal also, as veneer over frame, or as facing over 4" concrete block. Available in pastel tones for exposed masonry interior walls.

Expensive? Just the reverse! Material for material, Cavitex costs less than frame. This low price made possible by manufacturing economies. Local plants convert local raw materials into units for local builders. Usual high costs of freight and distribution are practically eliminated. Write today for 4-color brochure and name of nearest local production plant.

W. E. Dunn Mfg. Co.
420 W. 24th St., Holland, Mich.

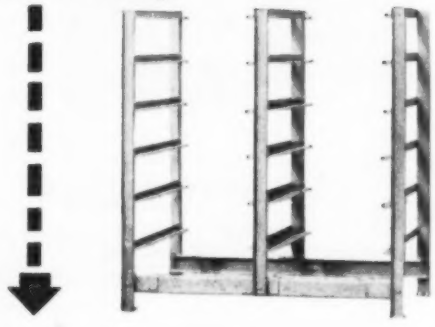
Local Manufacturing Opportunity

Many choice locations are open for the local manufacturing of Cavitex. Excellent opportunity for concrete products manufacturers. Each plant operates under franchise in protected territories. Cavitex machine available on lease or sale. If interested, ask for "Opportunity Unlimited."

X-2

CHASE BLOCK RACKS

Your best buy

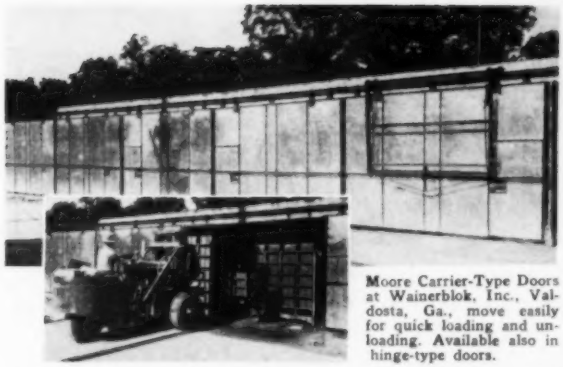


Here's why . . .

Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service.

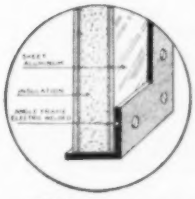
Send your specifications to Chase.

Chase FOUNDRY & MANUFACTURING CO.
2300 PARSONS AVENUE • COLUMBUS 7, OHIO



Moore Carrier-Type Doors at Wainerblok, Inc., Valdosta, Ga., move easily for quick loading and unloading. Available also in hinge-type doors.

Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs—inside the kiln—with Moore Aluminum-Insulated Doors. They improve curing conditions—save steam—last longer.

Send us dimensions of present door openings for quotation.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA · BRAMPTON ONT. CANADA · VANCOUVER B.C. CANADA · NORTH PORTLAND OREGON

LET

FLEMING

MANUFACTURING COMPANY

MAKE MONEY for YOU

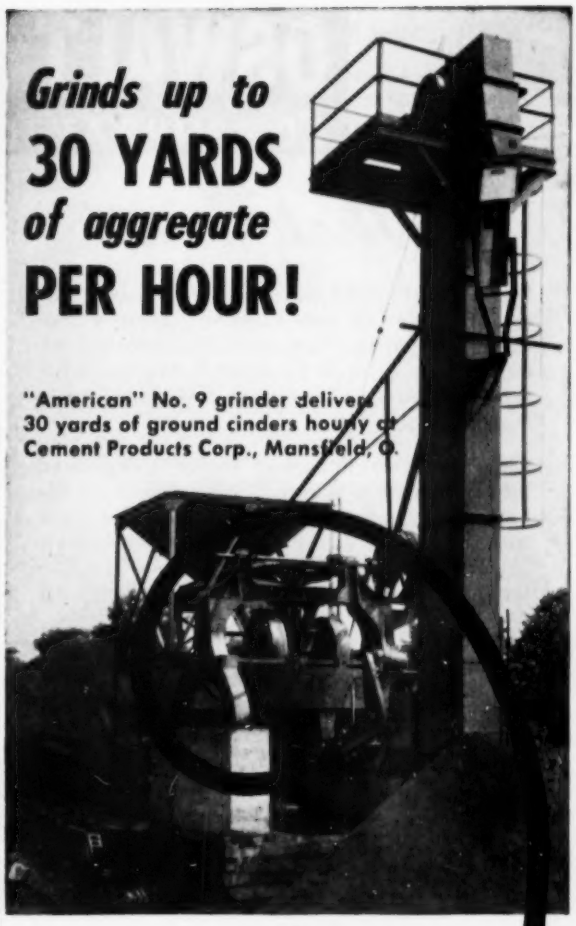
in your block plant!

WRITE TODAY
FOR COMPLETE INFORMATION,
PRICES, TERMS
ON THE

FMC-180 automatic concrete block machine
FMC-400 fully automatic double block machine
FMC Mixers; one, two, three and four-sack sizes
FREE—Concrete block plant layout!

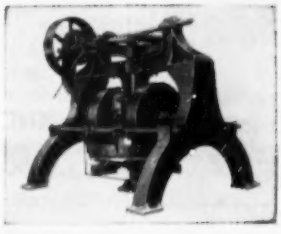
189 FLEMING AVENUE • CUBA, MO. • Phone CUBA 400

Grinds up to 30 YARDS *of aggregate* PER HOUR!



"American" No. 9 grinder delivers 30 yards of ground cinders hourly at Cement Products Corp., Mansfield, O.

HERE'S WHY AN *American* GRINDER IS THE *RIGHT* GRINDER FOR YOUR PLANT . . .



- Needs no screen plates
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- Has low power consumption
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YOU CAN'T BEAT AN "AMERICAN" FOR GRINDING

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and a wide range of quarry and mine products.

If accurate grinding, in volume, poses a problem in your plant . . . ask for a non-obligating consultation with the "American" grinding specialist . . . write, wire or phone.

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FOR VIBRAPAC OPERATORS

What it is

OSWALT SERVICE develops greatly increased production in your vibrapac without sacrifice of quality. This result is achieved by methods originated by Oswalt engineers after many years of research and actual tests in plant operation.

Complete Oswalt Service includes Improved Vibration and Machine Changes that boosts output 50% or more — New Simplified Control for Height and Density of Block — New Shock-Free Block Ejector and Front-End Pallet Feeder which help to eliminate cracking.

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When your vibrapac machine is completely Oswalt-Serviced, you are assured of the "know-how" and experience which have produced satisfactory results in scores of plants.

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for protection while handling blocks, brick, tile, etc. Workmen like GS heavy thumb-style chrome leather hand pads, sewed with steel thread for extra wear.

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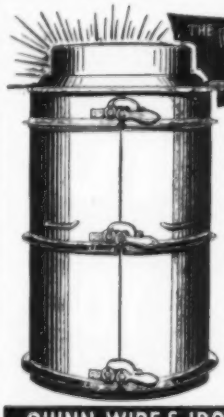

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The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

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For making pipe by **hand methods** by either the wet or semi-dry **processes. Built** to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

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WITH TRUSSED DESIGN

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FAST AND CLEAN DISCHARGE of even the lowest slump concretes is made possible by the patented blade design of this Worthington Hi-Up Truck Mixer, one of a fleet owned by the McNamee Ready Mixed Concrete Co. of Xenia, Ohio.

"Drivers, shop men, customers—everybody likes our new Worthington HI-UP Truck Mixers"

Says Charles F. McNamee of the McNamee Ready Mixed Concrete Co., Xenia, Ohio

McNAMEE DRIVERS LIKE THE HI-UP because its unrestricted hopper opening keeps charging time to a minimum. Both charging and mixing are accomplished with the drum rotating in the same direction. And the engineered weight distribution of the Hi-Ups lets you carry the maximum legal payload.

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We've been getting letters like this from Worthington Hi-Up Truck Mixer users all over the country. Why not find out for yourself about these modern Blue Brutes. Get the facts from your nearest Worthington distributor, or write directly to Worthington Corporation, Concrete Machinery Division, Section R.3.6, Plainfield, N. J.

R.3.6

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IF IT'S A CONSTRUCTION JOB, IT'S A ***BLUE BRUTE*** *JOB!*

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Improve Material Handling with
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There's a low-cost, Hi-Speed, better-built BAUGHMAN for every contracting need—belt-and-bucket, (Models 175 and 220), troughed belt (Model 230), or screw-type (Model Q-51). Before you buy any portable or stationary conveyor, let your distributor demonstrate BAUGHMAN'S years-ahead features—or write for full details.

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- All-welded ALLOY STEEL construction—17% stronger, 30% lighter, 5 times more rust-resistant
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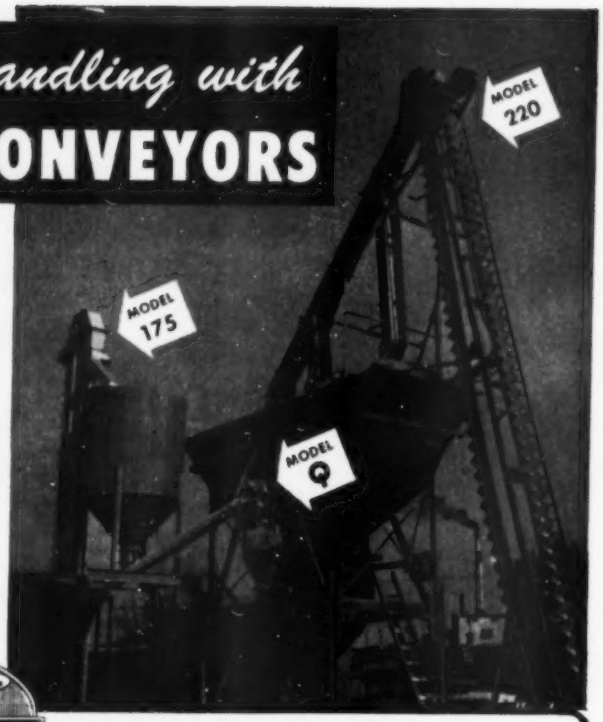
- Extra-rugged construction where it counts



Model TST-10 Bulk Material Transport Body. To haul cement or other dry powdered material. Completely self-unloading by Twin Auger Discharge. Write for complete literature.

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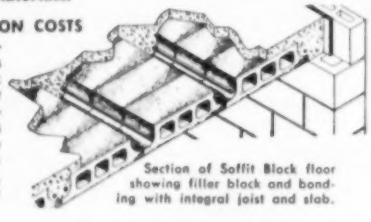
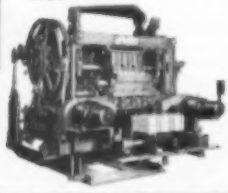
Vibrapac block plants are now adding to their profits by manufacturing Soffit Filler Block for floors and roofs. These units assure permanent, fire-safe construction, at low cost. Soffit Block provide maximum acoustical and insulation values with natural base for radiant heat installations. Made in various sizes to coordinate with other modular materials.

CUTS CONSTRUCTION COSTS

Temporary adjustable steel centers support Filler Block while slab and joist are curing. Conventional shoring is eliminated. The smooth, flush surface can be plastered, painted or left exposed.



Section of Soffit Block floor showing filler block and bonding with integral joist and slab.



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Vibrapac Block for walls, floors and roofs, in all styles and sizes, are made on a Besser Vibrapac, using one set of Plain Pallets. Fully automatic. No machine operator required. Write for descriptive literature.

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ALPENA, MICHIGAN, U. S. A.
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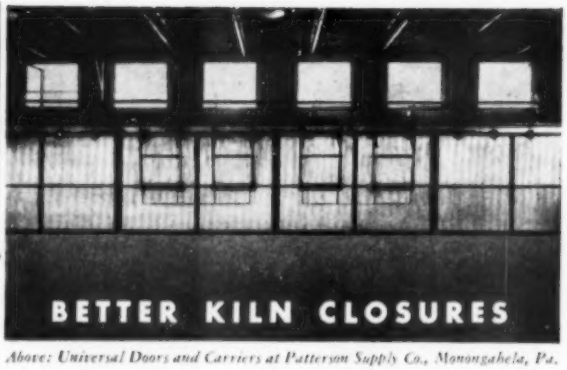

Above: Universal Doors and Carriers at Patterson Supply Co., Monongahela, Pa.

CAN *cut your costs per block—and improve your quality-uniformity*

Block plants the country over are reducing the cost of curing and stepping up quality-uniformity by installing modern, efficient, kiln closure equipment. They have found it *stops costly losses of heat and steam* and helps *achieve uniform curing conditions.* Why not investigate—

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fully insulated, all-metal DOORS
and world-famous DOOR CARRIERS

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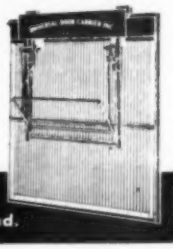

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Amazing cutting speed and performance are yours with a genuine Clipper Diamond Blade. Rigid quality control, manufacturing "know-how", and the ability to select and use the best materials make Clipper Diamond Blades the World's Finest . . . Use one on your next job!

Clipper Blades Fit Every Make and Model Masonry, Concrete, or Hand Power Saw.

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NO SEAM HERE
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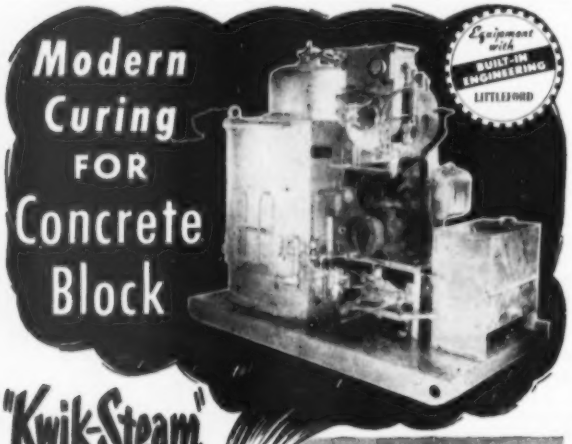
In Canada, Safety Supply Co., Toronto

CARROLLTON, OHIO

Modern Curing FOR Concrete Block



"Kwik-Steam" GENERATOR

Curing Concrete Products by Steam now can be done the "Low-Cost" way by using a Littleford "KWIK-STEAM" Generator. These compact units are the fastest steam-producing generators ever designed, *they deliver steam in 2 minutes' time from a cold start, and only operate when steam is needed.* Being fully automatic they require little attention and do not need a specially trained operator. Made in models to fit any curing space; sizes range from 20 to 165 B. H. P.

Cut your curing time and curing expense, have a "KWIK-STEAM" Generator on the job.

LITTLEFORD

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403 E. Pearl St.
Cincinnati 2, Ohio

INDEX TO CONCRETE MANUFACTURERS SECTION ADVERTISING

A A Wire Products Co.	177
Adrian Peerless, Inc.	174
Andrews Equipment Service	202
Autocar Sales & Service Co.	203
Baughman Mfg. Co.	216
*Besser Manufacturing Co.	170, 194, 195, 212, 216
*Bergen Machine & Tool Co., Inc.	205, 219
Builders Structural Steel Corp.	190
*Burmeister Company	175
*Butler Bin Co.	172
Carpenter Mfg. Co.	219
Chain Belt Company	206
Chase Foundry & Mfg. Co.	212
CIMCO	218
Cleveland Vibrator Co.	198
Clipper Mfg. Co.	217
Columbia Machine	211
Dunn Mfg. Co., W. E.	212
Dur O Wal	214
Fleming Manufacturing Co.	213
*Fuller Co.	220
General Scientific Equipment Co.	214
Heltzel Steel Form & Iron Co.	207
Hoffmann Co., George W.	203
International Harvester Co. (Motor Trucks)	204
Johnson Co., C. S.	214
*Jones Concrete Machinery Co.	196
Kent Machine Co.	199
Kirk & Blum Mfg. Co.	200
Lith-I-Bar Co.	221
Littleford Bros., Inc.	218
Master Builders Co.	222
Medusa Portland Cement Co.	209
Metropolitan Equipment Co.	203
Moore Dry Kiln Co.	213
National Conveyor & Supply Co.	197
Oronite Chemical Company	173
Oswalt Engrg. Service Corp.	214
Praschak Machine Co.	219
Pre Caster, Inc.	198
Quinn Wire & Iron Works	214
Reichard Coulston, Inc.	219
Riddell Corp.	213
Servicised Products Corp.	200
*Smith Co., T. L.	208
Spray-O-Bond Co.	192
*Stearns Manufacturing Co.	176
Surety Rubber Co., The	218
Truckstell Manufacturing Co.	210
Unit Crane and Shovel Corp.	193
Universal Atlas Cement Corp.	168
*Universal Door Carrier, Inc.	216
Williams, Roger F.	219
*Worthington Corp.	215

*See also Detailed Information in 1953 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

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CAN SAVE MONEY 5 WAYS
by mixing your own concrete.
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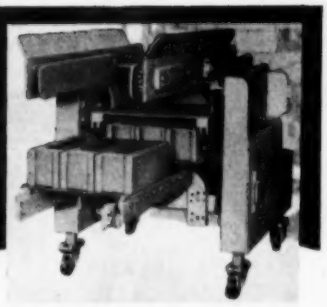
Feeds Pallets OVER outcoming block!

Detachable to roll away in 30 seconds!



- Takes 18-1/2 x 26" or 19 x 27" pallets
- Adjustable for block heights-3-1/2 to 9-1/8"
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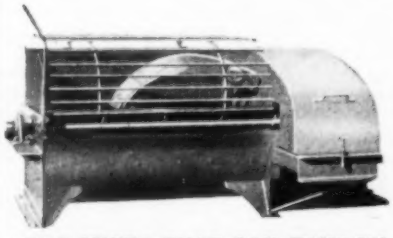

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Attention_____

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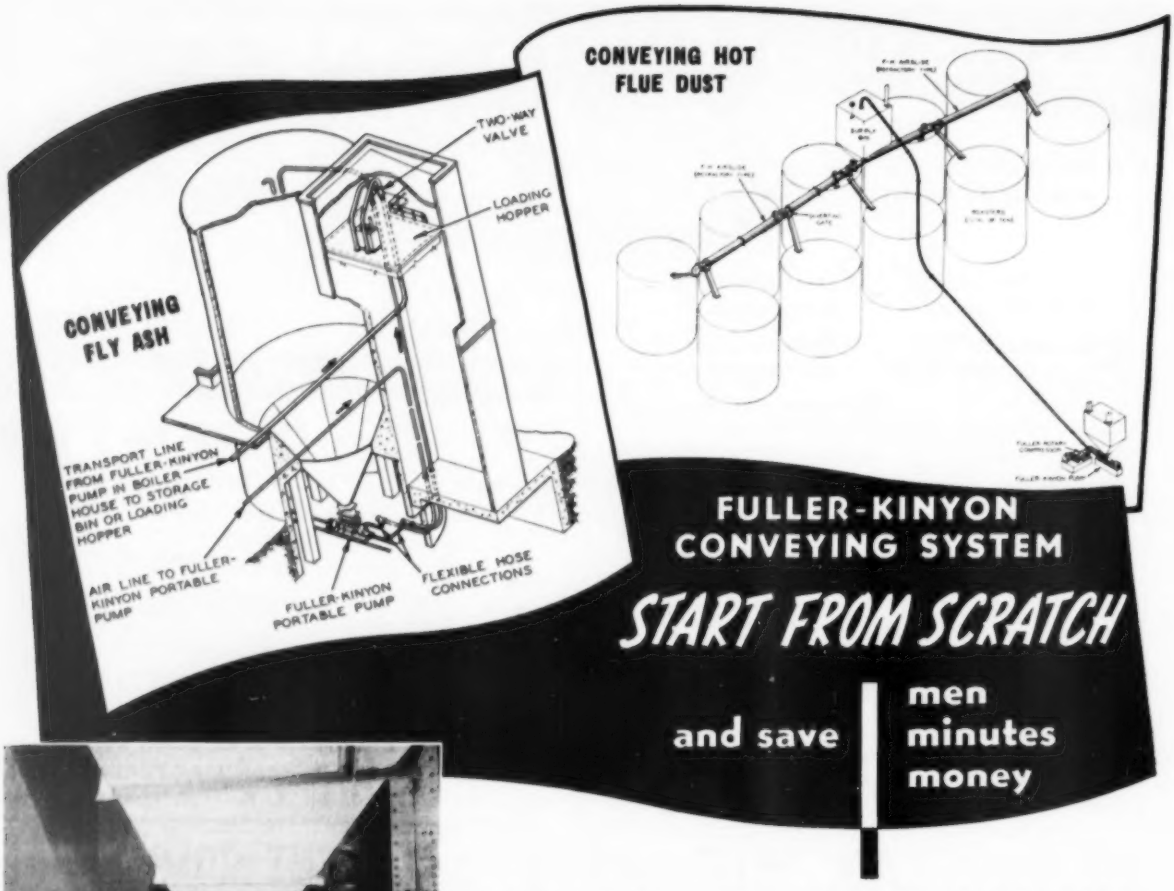
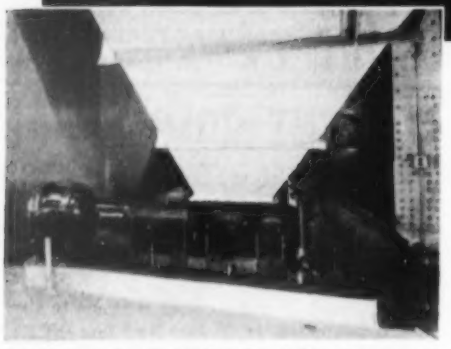
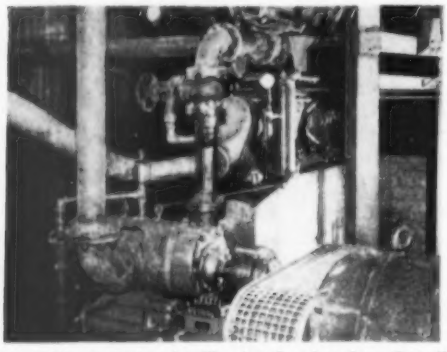




Fuller-Kinyon System handling fly ash in a large central-generating station, from boilers to storage, storage to loading hopper. See drawing upper left.



Fuller-Kinyon System handling hot flue dust from Cottrell precipitator collecting hoppers to supply bin. F-H Airslides convey and distribute uniformly to roasters. See drawing upper right.

The best way to solve any problem of conveying dry pulverized materials is to "Start from Scratch." Get all the facts on pneumatic conveying systems while you are still in the planning stage . . . either when building a new plant or modernizing an old one. Pneumatic conveyors permit economy and convenience in location of buildings and production equipment without the restrictions or straight-line limitations of mechanical conveyors. The layout of the system can be designed to meet the specific requirements of the job, to conform exactly to local conditions, to insure minimum cost for erection, maintenance, and supervision.

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Fuller-Kinyon Systems have many advantages: conveying lines can be located anywhere—underground; suspended on simple hangers overhead; vertically; around corners; over long distances; and to practically any number of delivery points. There are no mechanical or explosion hazards. Conveying is clean, fast, and at minimum cost per ton of material handled.

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FULLER COMPANY—CATASAUQUA, PA.

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DRY MATERIAL CONVEYING SYSTEMS AND COOLERS —
COMPRESSORS AND VACUUM PUMPS —
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P-149
2112

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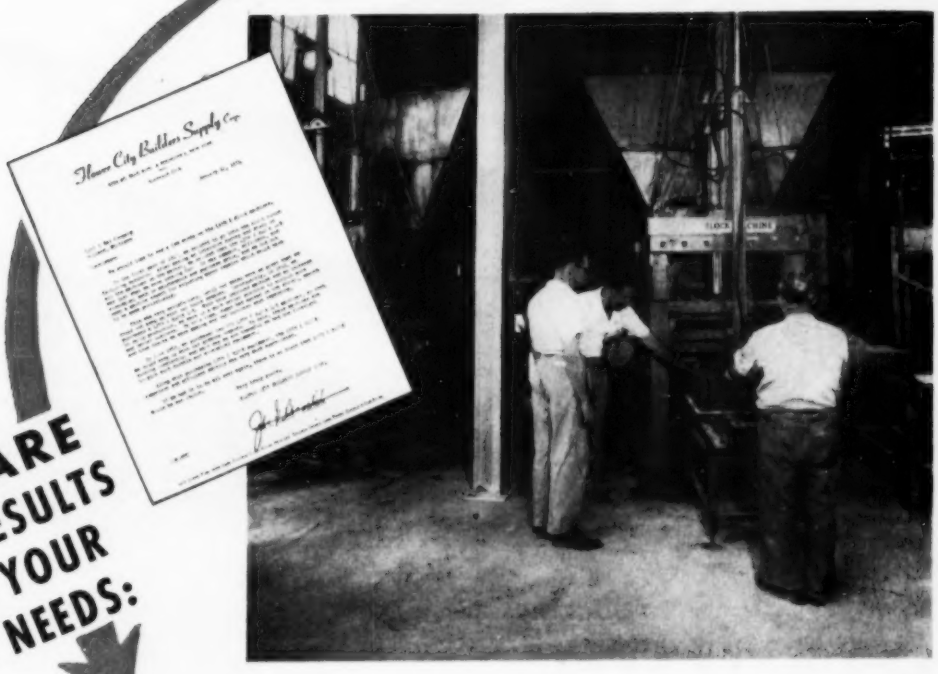

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In June 1953, we purchased two (2) LITH-I-BLOCK L-5 machines, so that we could keep up with our growing demands. To date, these machines are running constantly, and each day we are thankful we had the foresight to pick such durable and economical equipment.

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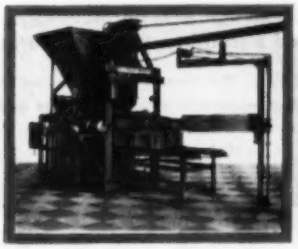

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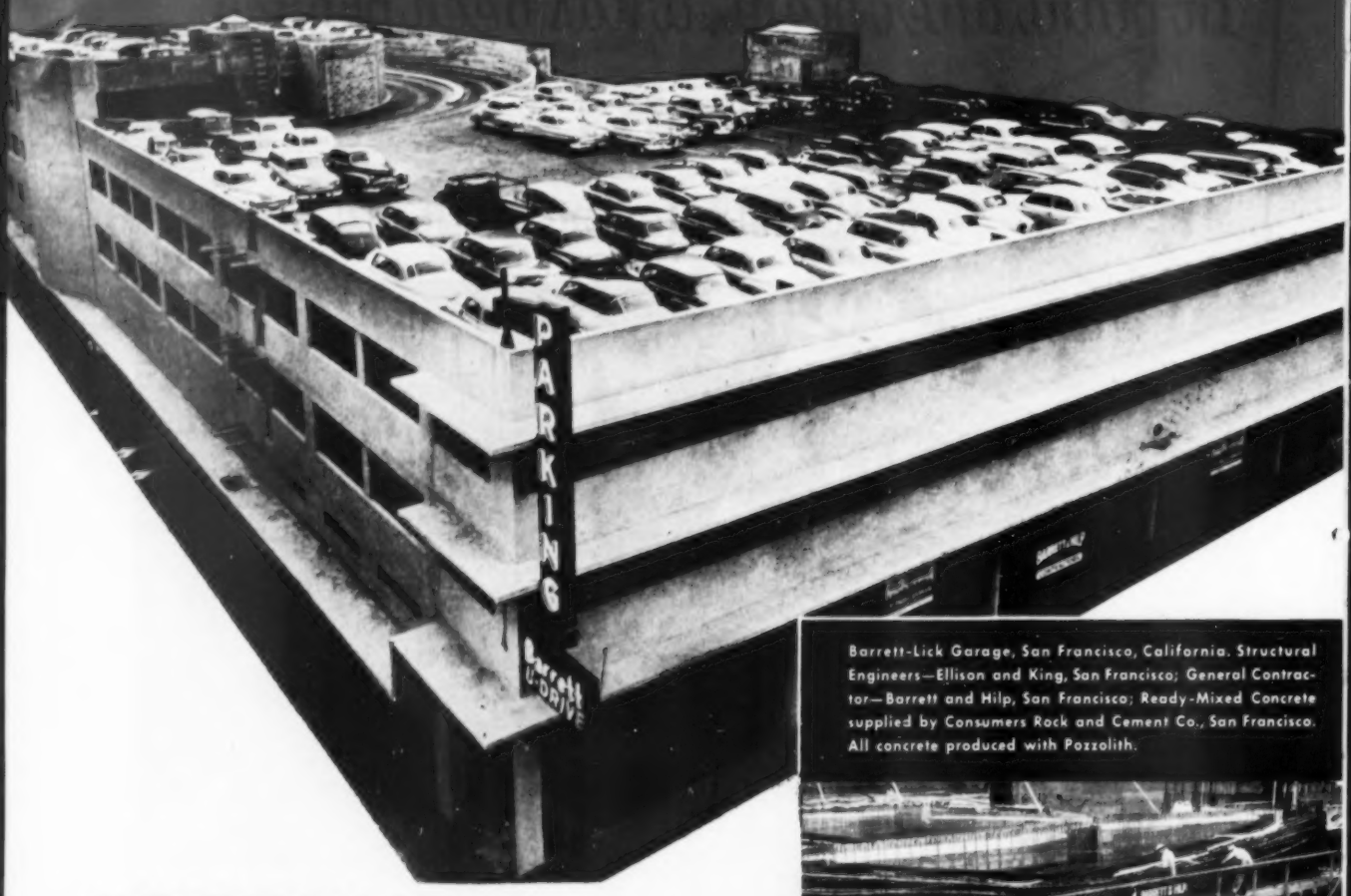
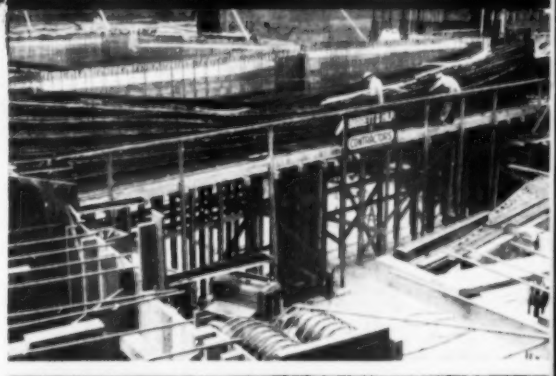
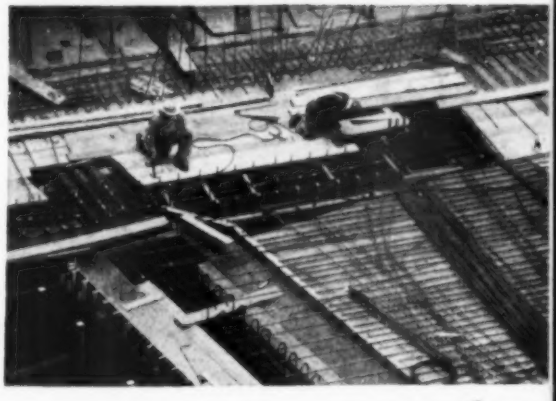


Barrett-Lick Garage, San Francisco, California. Structural Engineers—Ellison and King, San Francisco; General Contractor—Barrett and Hilp, San Francisco; Ready-Mixed Concrete supplied by Consumers Rock and Cement Co., San Francisco. All concrete produced with Pozzolith.





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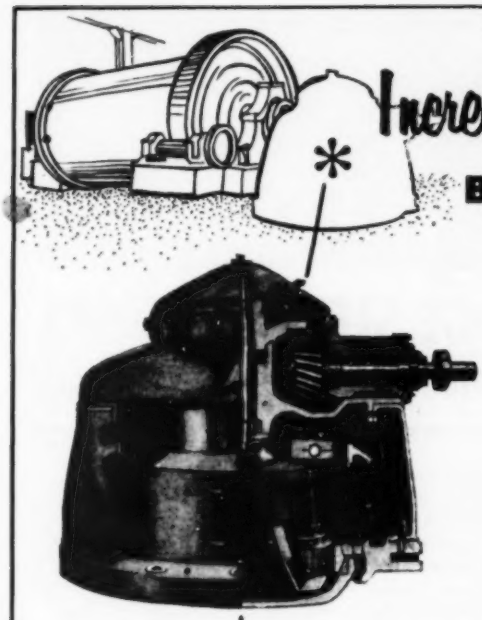

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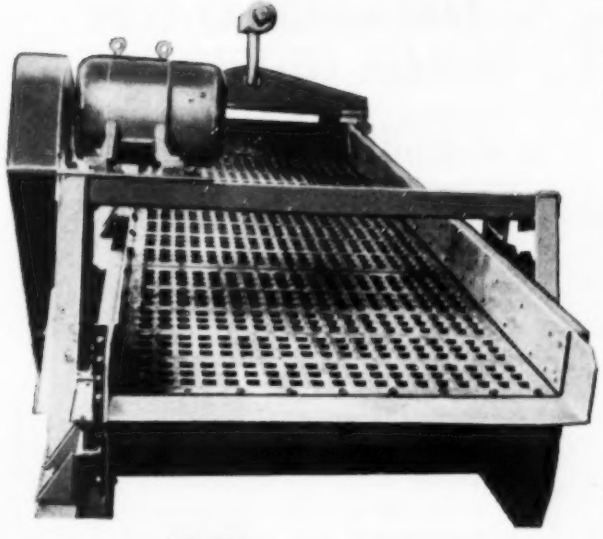

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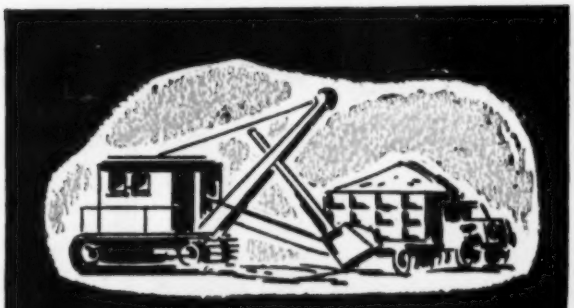

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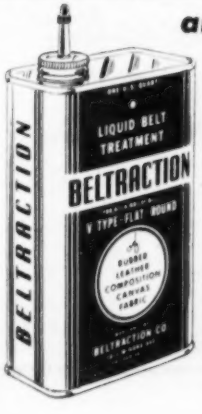

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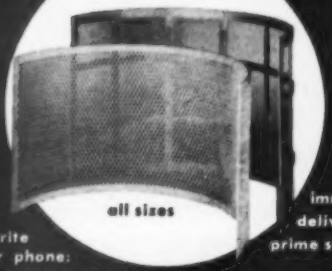

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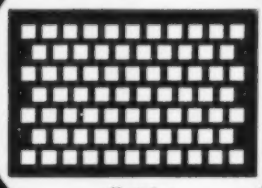

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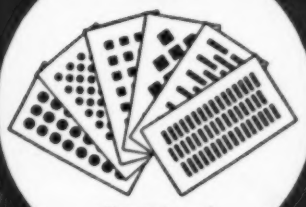

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Manitowoc **Used** Shovel Attachment, complete, for Model 1600, or Model 2000.
Northwest "18" **Used** ½ yd. Dragline.
Osgood "200" **Used** ½ yd. Trench Hoe.
Pettibone Mulliken "15" Demonstrator 1½ yd. Speedall Front End Loader, 4-wheel drive. Will discount substantially.
Haiss "75W" Bucket Loader, rubber-tired. Two years old.
Diamond "1536" **Used** R.B. Jaw Crusher.
Caterpillar "D8800" **Used** Diesel Power Unit.

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120 S. Pierpont Rockford, Illinois

WORLD'S LARGEST INVENTORY
NEW AND GUARANTEED REBUILT EQUIPMENT
MOTORS TRANSFORMERS GENERATORS DIESELS
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ELECTRIC EQUIPMENT CO.
L. D. (Long Distance) 65
ROCHESTER 1, NEW YORK
Explosion Proof Motor Headquarters

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Good Dependable Bargains!

SPECIAL SALE!

CHICAGO • PHILADELPHIA • PITTSBURGH

AIR COMPRESSORS, ELECTRIC

360′ Ing. Rand, direct connected 75 HP 3/60/220/440 motor, 24x48″ air receiver, wt. 7050#.

160′ Davey, 100#, 35 HP, 3/60/220, Nat'l. Bd. receiver, V-belt drive, I-beam skids.

BIN, 2-COMPARTMENT

Type "V-60" Butler All Steel 2-Compartment Bin, 2 sliding gates on bottom. 9′6″ W, 17′ L, 22′2″ high. Ht. of bin less legs 11′5″. A real buy.

BOILERS

125 HP Erie City Economic, 100#, Nat'l. Bd., horiz.

125 HP Pennsylvania, 125#, Natl. Board, horiz.

115 HP Marion, 151#, horiz.

100 HP Pennsylvania, 125#, ASME, horiz.

80 HP I.B.W., 152#, 60″ dia. x 120″ high, vertical.

40 HP Nagle, 125#, 48x108″, ASME 1292, vertical.

BUCKET, DRAGLINE

3 Yd. Page Dragline Bucket. A real buy.

DERRICKS

30 ton Wiley Mdl. F Stiffleg, 60, 80 or 100′ boom, rated with 60′ boom 30 ton @ 38′, 15 ton @ 57′.

20 ton Terry Steel Erectors Guy Derrick, 115′ mast, 105′ boom, rebuilt.

HOISTS, ELECTRIC

50 HP American 3/drum, 3/60/220 slipring, wt. 10,000#, rated 7,500# @ 200 FPM.

This Month's SPECIALS

CAR PULLERS

15 HP Mead Morrison #A-4015, Lincoln motor 220/3/60, 15,000# @ 45 FPM. Excel. condition.

7½ HP Mead Morrison #952, 3/60/220, handle 1 to 5 loaded cars.

CRANES, CRAWLER

No. 3 Northwest Crawler Crane, Ser. 4603, gas powered, 40′ boom.

¾ yd. Mdl. 255A P&H Cranes, Sers. 5750 & 8243, gas engines, 30′ to 40′ booms.

¾ yd. LS-85 Link Belt, year 1946, Cat. D-4600 Diesel, 40′ boom.

Mdl. 501 Koehring #1071, 60-70-80′ boom, 18′ jib, Mdl. K Wisc. gas eng., cap. 40,000# @ 12′.

1½ yd. Lorain Mdl. 77 Diesel Crane, Ser. 9163, D-13000 Cat. engine, 45′ to 85′ boom, 20′ jib.

1½ yd. P&H Mdl. 655-A Diesel Crane or Dragline, Ser. 6426, 80′ boom, 20′ jib, Cat. D-13000 eng., hi gantry.

1½ yd. Mdl. K-360 Link Belt, Ser. 1959, Cat. D-13000 Diesel, 80′ boom.

1½ yd. Mdl. 78 Lorain Diesel, Ser. 11281, 150 HP Cat. D-13000 Diesel, 70-100′ boom, jib.

PRICES SHARPLY REDUCED ON ABOVE CRANES FOR INVENTORY CLEARANCE.

CRANES, LOCOMOTIVE

30 ton Mdl. F OHIO #3266, 50′ boom, oil fired, Natl. Bd. 200# boiler.

50 HP Thomas Class A 2/drum, 3/60/220 slipring, wt. 9,500#, rated 6,000# @ 250 FPM.

40 HP National 1/drum, 2/60/220, wt. 7,000#, rated 3,500# @ 350 FPM.

HOISTS, STEAM

12x12 3/drum Lambert National #15,442-3, rated 20,000# SLP. Wt. approx. 30,000#. Like new, steel gears, 2 clutch winch heads.

11x12 3/drum American #2005B, steel gears, 2 clutch winch heads. Wt. approx. 27,000#. Rated 15,000# SLP.

8¼x10 2/drum 9,000# SLP, wt. 10,000#. American, Clyde, Lidgerwood.

Lambert, 2/drum, w/space for boiler. Size 8¼x10 drums 14x25x7″; size 9x10 drums 14x24x7½″; size 10½x12 one drum 24x34x8″ LP 9,000#, other drum 16x24x11″, LP 13,000#.

WE HAVE AN EXCELLENT SELECTION OF HOISTS—*ELECTRIC, GAS* AND *STEAM*—1, 2, and 3/DRUM, TO FIT ANY OF YOUR REQUIREMENTS.

"Time for Pumps"

12″ Dayton Dowd, vert., 50 HP, 3/60/220/440, 6,000 GPM @ 19′, 4250 GPM @ 32′. Wt. 4110#. Centrifugal.

6″ Carter, self-prime, Hercules gas eng., 1,500 GPM, centrifugal.

Pumps, from 1½″ up to 12″, electric or gas, centrifugal, vertical and horizontal, diaphragm, sludge, steam and sump pumps.

LOCOMOTIVE, 65 TON STD. GA.

65 Ton American Loco. Co. Diesel Electric, Std. Ga., Locomotive, fine shape and a real buy.

SWINGERS

6¼x8 Clyde throttle reverse independent, wt. 4600#, rated 15,000#.

6½x8 Lambert throttle reverse independent, wt. 3800#, rated 10,000#.

4x5 Size 145 American throttle reverse, wt. 2200#, rated 4,000#.

All this equipment is owned by us and may be inspected at one of our show rooms.

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EXCELLENT VALUES — DEPENDABLE EQUIPMENT

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Bucyrus-Erie 1 yd. Crane
P&H 1 yd. Crane and Dragline
General ¾ yd. Truck Crane (Diesel)
General ¼ yd. Combination (Diesel)
Haiss 75-C Bucket Loader
Payloaders, Model HA
Butler Car Scoops
Diesel Tractors & Dozers,
40-50-75-100-160 H.P.
Intl. Wheel Tractors with 8 yd. Dump Wagons
Tournapulls & Scrapers
Portable Compressors,
105-160-315-500'
Gardner-Denver Wagon Drill
50 H.P. DD Gas Hoist
40 H.P. SD Elec. Hoist
4 ton Steel Stiff Leg Derrick
Fork Lift Trucks, 3500, 6000,
7500, & 15,000 lbs.
80 H.P. Vertical Boiler

Complete Price List On Request

RENTAL SERVICE CO.

4601 No. 4th St., Philadelphia, Pa. Phone GLadstone 5-4200

"OUR 38TH YEAR"

SHOVELS, ELECTRIC: One 6 yd. capacity Shovel and one 5 yd. capacity combination Shovel and Dragline, 2200 volt, late models, excellent condition.
LOCOMOTIVES: 2—65 ton diesel electric, standard gauge, thoroughly modern, excellent condition. For sale or rent.
LOCOMOTIVE CRANE: Link Belt 25 ton, standard railroad gauge, gasoline powered, air brakes, cast steel trucks, bucket handling, with or without 1¼ yd. clam shell bucket. Thoroughly modern, excellent condition. For sale or rent, located Minnesota.
COMPRESSORS: Ingersoll Rand type XRE, 225 H.P. synchronous motor, 2200 volt, 300 RPM, with intercooler, aftercooler, air receiver, silencer, etc., completely automatic, new 1951, used only 23 hours per week. Chicago Pneumatic OCE, 20" x 12" x 14", 230 H.P., 257 RPM synchronous motor and controls.
MINE HOISTS: Single and double drum 100 to 1500 H.P., with all electrical equipment. Complete specifications, drawings and photos available.
MINE HOIST SPECIAL: Nordberg 1200 H.P., 1400 FPM, one drum clutched, wraps 1100 ft. 1¼" rope, complete with motor and all auxiliary equipment, with or without head frame.
CLASSIFIERS: 4—Akins 54" x 34 ft. with lifting device, 220/440 volt motors. 2—Wemco 78" Simplex single screw, double pitch, 28½ ft. tank, 220/440 volt motors. All in condition like NEW. 1—Wemco Duplex size 72" x 32 ft., type SH, Pitch double and variable, with lifting device, 220/440 volt motor. NEW and UNUSED. Three located Nevada.
PULVERIZER: Hardinge 5 ft. x 22" Ball Mill complete with motor driven disc feeder, 30 H.P. motor and control.
JAW CRUSHERS: 48" x 60"; 42" x 48"; 24" x 36".
BATCH & MIXING PLANTS: One with 55 yd. cap., 2 yd. mixer, etc. One 200 ton with one or two Koehring 2 yd. mixers. Both plants complete with all auxiliary equipment. Photos and drawings available.

A. J. O'NEILL
Lansdowne, Pa.
Phila. Phones: MAdison 3-8300 - 3-8301

Super cap. encl. 20" bucket elevator 75'
Enclosed 8" cement elevator 66'
Enclosed 8" spaced bucket elevator 40'
Continuous bucket elevator 10"-24" open and enclosed
Continuous bucket elevators on belt
Elevators for barrels, sacks and kegs
Repair parts for elevators and drives
Comb. chains: C102B, C102½, C131, C110, C111
Ley Bushed chain: 823, 825, 835, 844 with atta.
Steel Roller Chain & Sprockets
Trough belt idlers: From 14" to 42", with pulleys and drives
Steel Apron Feeder 18" wide, 6' center
Steel Apron Feeder 24" wide, 45' center
Vibrating Feeders with controllers. Jeffrey 2A
Eccentric roller bearing, 2-15/16"
Screw Conveyors 6" to 16", 9" screw 56' long
New and used conveyor belt.
Repair parts for drives, conveyors and elevators
Belt training idlers 16", 24" and 30".
Rubber disc return idlers: 16", 30", 36", 42"
Champion 1030 roller bearing jaw crusher
Hercules 12" x 9" jaw crusher
Farrell A 36" x 18" jaw crusher
Penna. SXT-8 hammermill. Requires 125 hp. motor
Stedman 30"x24" hammermill, roller bearing
Gruendler 2XA Herculas type hammermill
Single and double roll coal crushers
Sturtevant Fine Crusher 00 with 2 hp. motor
Prater pulverizer Size 5, with 10 hp. motor
Electric and air driven small hoists
Several 12" dia. feeders with ¾" hp. gearmotors
Enclosed Hummer single deck double vibrating screen
9 Westinghouse 15 hp. gearmotors 3/60/440/120 rpm.

G. A. UNVERZAGT & SONS, INC.
136 Colt Street, Irvington 11, N. J.

FOR SALE

TOLEDO SCALE. Model 63-7743, 60000 lb. capacity, 34 x 10 foot platform with unit weight printer, never been used, substantial discount.
24 foot Enclosed Cup Conveyor in perfect condition.
Cedar Rapids 10 yard Portable Bin with U2 motor and conveyor.
304 Koehring ¾ yard Power shovel.
UD18 International Diesel — not used since complete overhaul—new crankshaft, pistons and sleeves.
Lippman Jaw Crusher 24 x 36 Perfect condition — Mounted on chassis except wheels with a new 36 x 12 foot Pioneer Apron Feeder with discharge Conveyor. Plant powered by Cat. D 4600.
Portable Cedar Rapids 40 x 33 Hammermill Plant powered by GM twin diesel. Plant perfect for producing chips road rock, or any grade stone—Will sacrifice.
2—40 ton Lippman Steel Bins.

NEUHEISEL LIME WORKS, INC.
1339 Menomonie Street
Eau Claire, Wisconsin

SPECIAL OFFERING

1—P. & H. ½ yard shovel in good condition $6,000.00

1—Factory rebuilt 14 x 26 crusher.

ACME ROAD MACHINERY COMPANY
Frankfort, New York

MINE AND SLOPE HOISTS
1—20,000# Allis-Chalmers, Dbl Drum
1—26,000# Nordberg, Sgl Drum
1—26,000# Vulcan, Sgl Drum AC with MG Set Complete
1—11,000# Wellman, Sgl Drum AC
1—16,000# Allis-Chalmers, Sgl Drum
1— 7,000# Ottumwa, Sgl Drum AC
CARPULLERS AND LOADERS
1— 5,000# Jeffrey Carspotter AC
1— 6,000# Brownie Carspotter AC
1— 5,000# Link-Belt Carspotter AC
1—20,000# Amer. Hoist Carspotter AC
1—20,000# LB Endless Puller
CRUSHERS AND MISC.
1—36x36 Jeffrey Sgl Roll
1—12x16 Eagle Dbl Roll
1—18-20 Eagle Dbl Roll
1—420'x20" SA Comb. Scraper & Bucket Conveyor or w/o MT'r. Ideal for tipple or dock.
2—24"x60' SA porta. conveyors, AC mt'r
1—(New) NOLAN Porta. feeder
1—22"x66" SD-RS Roots Connersville Positive Pres. Blower output 45 CF per Rev. Complete with 100 hp. AC mt'r and controls
1—3 yd. Sauerman Scraper Bucket System
1—75'x28'x30' high Steel Building

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GUARANTEED MOTORS

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Hoists • Compressors • Transformers

Units of Every Size and Description

SLIP RING MOTORS

3 Phase, 60 Cycle, 220 or 440 Volts (*2200 volts or higher)

HP	MAKE	TYPE	SPEED
2000	*G. E.	MT-30	257
1500	*G. E.	MT-30	240
1250	*West.	CW	600
1000	*West.	CW	250
700	I.A. C.	ANY	720
500	*G. E.	IM	3600
500	*G. E.	MTP	1800
500	*G. E.	MT	450
500	West.	CW	350
400	A. C.	3-brg.	450
400	*G. E.	MT412	450
350	West.	CW	900
300	*G. E.	IM13A	1800
250	West.	HF15H	600
200	G. E.	IM15	100
150	G. E.	MT549 BB	1800
125	*G. E.	MT549	1800
125	G. E.	IM15A	600

WE'LL SELL, BUY OR TRADE

PHONE CANAL 6-2900

CHICAGO Electric Co

1329 W. CERMAK ROAD
CHICAGO 8, ILL.

FOR SALE

300 KVA DIESEL AC GENERATOR

General Electric 440/60/3 powered by two Model 8DC 1125 Buda Diesel Engines, connected with Twin Disc clutches and multiple V Belts. One Engine has electric starter and generator, the other has gasoline engine starter. This set complete with all controls and Panel Board.

75 KVA DIESEL AC GENERATOR

Westinghouse 440/60/3 direct connected to Model 6DC 844 Buda Diesel engine with electric starter and generator, and complete with all controls and Panel Board.

This equipment may be inspected under full operation until about May 15th. Will be available after that date account of Public Utility connection to furnish power at quarry.

ONE DIAMOND 4' x 8' Three Deck Screen.

OCOYA STONE COMPANY

PONTIAC, ILLINOIS

FOR SALE

1—#10 Chambers Automatic Brick Cutter, motor and drive.....$1500.00

1—Allis-Chalmers Triple Deck Vibrating Screen, 4 ft. x 8 ft..... 1700.00 7½ h.p. motor, extra screen frames & bearings.

1—McLanahan Stone Roll Crusher, 18 in. diameter, 24 in. wide ..... 1900.00 V-belt and 30 h.p. motor.

1—Ingersoll-Rand 315 cu. ft. Air Compressor Gasoline Driven 2900.00

All items in excellent condition

UNION MINING COMPANY

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FOR SALE

1½ yd. Erie clamshell bucket
4 x 10 Telsmith Screen
HD-14 Allis-Chalmers Tractor
Sullivan Air Compressor, Class WL 60
160 cu. ft. per min. with 40 HP. electric motor
Chicago Pneumatic concrete vibrator, Model 417, new

CONTRACTORS EQUIPMENT CO.

903 Jefferson Bldg. Peoria, Illinois

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NEW TROUGHING IDLER CONVEYORS

We take our loss on our stock of short length belting and previous model idlers. You save as much as 50% by buying the BONDED CONVEYOR SPECIALS listed with conveyor belting in two pieces. Belting is 4 ply, 28 oz. duck, ⅛" top rubber cover and 1/32" bottom cover.

Belt Width	Length of Conveyor	List Price	Sale Price
18"	25'	$1229	$658
18"	45'	1839	960
18"	50'	2054	1043
18"	85'	3209	1581
24"	25'	1322	739
24"	45'	2062	1085
24"	60'	2617	1355
24"	100'	4097	2037
30"	25'	1421	806
30"	65'	3101	1617
30"	80'	3731	2295

Other lengths & belt widths at bargain prices.

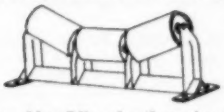
CONVEYOR BELTING

New heavy duty rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For boxes, bags & bulk materials. Troughs easily. Belt is 4 ply, 28 oz. duck carcass, ⅛" top cover, 1/32" bottom cover. Famous brands at deep cut prices. Fresh stock.

WIDTH	PRICE
18"	$2.50/ft.
24"	3.23/ft.
30"	3.97/ft.

ADDITIONAL WIDTHS & PLIES AVAILABLE AT LOW PRICES. WRITE FOR FREE SAMPLE.

TROUGHING IDLERS & RETURN ROLLS



3-roll Troughing Idlers for these sizes:

16" belt	$17.25	30" belt	$19.50
18" belt	18.00	36" belt	20.25
24" belt	18.75	48" belt	21.25

1-roll Return Idlers for these sizes:

16" belt	$6.75	30" belt	$8.25
18" Belt	7.13	36" belt	8.75
24" belt	7.50	48" belt	10.25

All steel. Interchangeable with other well known makes. Replaceable ball bearings. Rust prof ball races; maintenance is negligible.

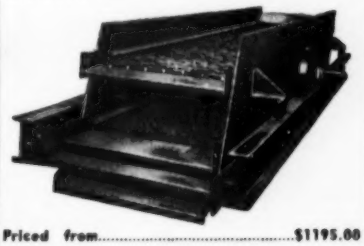
HEAD AND TAKEUP PULLEYS

All welded steel head and tail pulleys and assemblies complete.

Priced from **$60.00**

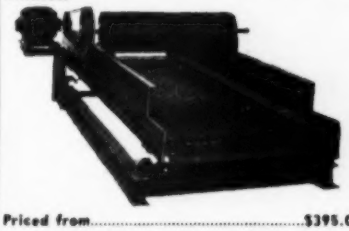
VIBRATING SCREENS

For sizing & separation of Rock, Sand, Gravel, Slag, Coal and many other uses. Shaft is mounted on self-aligning bearings & made in heavy duty eccentric shaft types; 1 to 5 decks, 3'x 8' to 5'x 14'.



Priced from **$1195.00**

Bonded General Purpose Screens are ideal & economical for medium operations. Sizes to 3'x 8' in 1 to 3 decks. Wire cloth or plate included.



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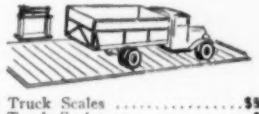
MOTOR TRUCK SCALES

For stationary and portable applications. Scales have steel lever system complete with structural steel weighbridge. Capacities to 50 tons. Recording beams available.



20 Ton Truck Scales	$525.00
26 Ton Truck Scales	582.00
33 Ton Truck Scales	825.00

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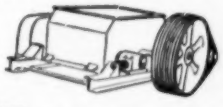
Bonded double roll crushers are available with Smooth, Fine or Coarse Corrugated rolls or any combination of same for crushing Lightweight Aggregate, Pumice, Perlite, Chemicals and similar material. Capacities to 100 tons per hour. Steel hoppers included.



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Bonded offers speed reducers for fractional to 60 H.P. motors in a variety of ratios.

Priced from **$32.00**

BUILD YOUR OWN CONVEYOR

Ready-Made Head, Tail and Intermediate Conveyor Sections
All Types Idlers, Return Rolls and Belting in Stock

Holdback	Head & Tail	Roll Idler	Self-Aligning Idler	Guide Idler	Wing Pulley
$90.00	$171.00	$6.38	$56.50	$13.75	$74.00

You are welcome to visit the Bonded plant at any time. Discuss your requirements with our engineers without obligation, or Write for Catalog and Prices.

BONDED SCALE & MACHINE CO.

Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders

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We have moved our Executive Offices from New York City and our Shops from Newark, N.J. to

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where we shall continue our 37 years of service to you.

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8—6' x 40', 5' x 40' Ruggles-Coles; 54" x 25' Class Xf-4 Ruggles-Coles, also 3—3' x 50', 5' x 50', 6' x 60', 7' x 70' Direct Heat. Also 3—6' x 50' Louisville Rotary Steam Tube.

3—Link Belt Roto Louvre Dryers—#207-10 (2'7" x 10'); #502-16 with all stainless steel contact parts; #604-20.

3—3' x 50' (or Coolers) made by Bonnot Co., Canton, Ohio.

ROTARY KILNS:

1—6' x 120' Vulcan Rotary Kiln.

CRUSHERS:

Jaw—2" x 6", 6" x 15" Sturtevant, 18" x 36" and 24" x 36" Farrel; 42" x 48" Traylor; Rolls; 42" x 16" Allis Chalmers Type B; 24" x 32" Penna Single Roll. Portable Plants; Cedar Rapids 1036-BBB; 2540-AAAA, 2036-AA, Also Pioneer with 30" x 42" primary and secondary Crushers, all Diesel driven.

PULVERIZERS:

1—#5047 Raymond High Side Mill.

2—#6669 Raymond Super Mills

6—#1, #0, #00, #000 Raymond Mills.

3—#0, #00, 8" Raymond Screen Mills

2—#51 Raymond Imp. Mills

3—Mikro #4TH, #2TH, Bantam SH

BALL AND TUBE MILLS:

6—Hardinge Mills, 3' x 8", 5' x 22", 6' x 22", 8' x 48".

4—Tube Grinding Mills, Made by Traylor, E. & M. Co. Allentown, Pa. Silex Lined, 4" x 13', 4'6" x 18'6", 5' x 22' and 5' x 20'.

8—Pebble Mills, porcelain lined; 3—6' dia. x 8', 800 gals. each. 1—6' x 5', 3—5' x 4', each with ball charge.

AIR SEPARATORS:

2—Raymond 6' x 16' dia.; 1—8' Gayco; 1—8' Sturtevant.

FILTERS:

3—#12 Sweetland Pressure Filters, each with 48 bronze Monel covered leaves on 3" C.C., ea. 642 sq. ft. f.a., 56 cu. ft.

All sizes Oliver Rotary Vacuum Filters.

Only a Partial List.

Send us your inquiries for Shovels, Cranes, Draglines; Jaw Gyratory and other Crushers; Symons and Telsmith Cones; complete Portable Crushing Plants; Rotary Kilns and Coolers; Air Compressors, Conveyors and FULL LINE OF CHEMICAL PROCESS EQUIPMENT.

OUR 37TH YEAR

CONSOLIDATED PRODUCTS COMPANY, INC.

#63 Garden Street
Hoboken, New Jersey
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N. Y. Tel. BA 7-0600

We buy your idle equipment.

JAW CRUSHERS — 6" x 3" to 60" x 48"

Before buying or selling any
FARREL-BACON JAW CRUSHERS
it will pay you to consult

BACON-PIETSCH Co., Inc.
Engineers & Manufacturers *Send for Catalogue*
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Machine Shop Facilities

FEEDERS
Conveyors, Screens, etc.

FOR SALE

BUCKET LOADER

New Model 75W Haiss Bucket Loader powered by LeRoi Gasoline Engine, two-wheel drive, swivel chute discharge. List price F.O.B. Charleston, $8,743.99. Our net price F.O.B. Charleston:

$7,000.00

CRUSHING PLANT

Used Model 546P Universal Primary 2036 Crushing Plant powered by 6DC844 Buda Engine, 60' Universal Conveyor powered by 4 Cyl. Wisconsin Engine, 25 Ton Bin. Complete F.O.B. Charleston:

$16,500.00

WALKER MACHINERY CO.
Phone 3-0173 - P. O. Box 2427
CHARLESTON, W. VA.

CRANES - SHOVELS BACKHOES

PRICED FOR QUICK SALE

½ Yd. - P & H - Byers - Unit - Insley 15B Bucyrus Erie.
¾ Yd. - Lorain - 22B Bucyrus Erie - Buckeye - Browning.
Truck Cranes - Quickway - Michigan Cruisers - Unit 1020
Northwest 6 - 2 Yd. P & H

60 CARRYALLS

LS-LP LeTourneaus - 88S-88U Wooldridges Garwood - Bucyrus Eries - LaPlante Choates.

Parts for Army Trucks, Tractors & Graders

The Ellis Company

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(Suburb of L.A.)

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Menlo 9-1177

RELAYING RAIL
All Sizes
Track Accessories
LEFTON INDUSTRIAL CORP.
General Office: 212 Victor Street
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FOR SALE

1 - 1 yd. N.W. shovel front for model #41, 1941.
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One—Koehring Shovel, Model 301, Serial No. 963, with 35ft. Boom. Working condition. $1500.00.

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CRUSHER 1540 Champion Roller Bearing Jaw Crusher
SCREEN 4 x 8' Four Deck Telsmith Pulsator

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FOR SALE — BOILER — VERTICAL

Diameter 54"—Length 8'5"
Pressure 160 lbs.
Year built 1952, used one season, steam crane.
Mfr.: International Boiler Works Co.

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Factory-Rebuilt, Like New

Caterpillar D-7 bulldozer, w/canopy & starter. 4 T series.
Lima PAYMASTER crawler 3/4 cy Shovel & Backhoe. New 1948 Chrysler engine.
Caterpillar D-4 Loader, one cy bucket. 7 U series.

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Telsmith gyratory crusher, 26", Model 25A.
Walking draglines, 3 to 12 yds. (8).
Rotary dryers, kilns, 8'x120', 54"x40', 7'x125'.
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Cat DW-10 wagons (3), 1946, bottom dump.
Whirley portal and barge type cranes (3).
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Marine diesel engines. Large dredges.
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Bucyrus 2-1/3 yd. shovel att. only, 52B-55B.

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With 45ft. boom and bucket, Minneapolis Moline gasoline motor. Price $4,000.00

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10 x 36" Roller Brg. Jaw Crusher
B&W Coal Pulverizers — complete
30' x 18" Rubber Belt Conveyor Unit
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Special bins to your specifications.
Conveyors—18"—24"—30"—36". Also belt.
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48" Symons, vert. disc.
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(Other Elevators from 20' to 50')

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8' x 125' x ¾".
7' x 140' x ⅝" (2).
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4'6" x 50' x ¼" with lifters.
5' x 67' x 5/16".
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NEWHOUSE 7", 10", 14"—KENNEDY 19R, 25R, 37—SUP. McC. 6" & 10" AL. CHAL. 322R, 222R, 539R—TRAYLOR TY 36".

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6", 10", 14", 20" & 36" SUP. McC.—GATES AL. CHAL. 3, 4, 5, 6, 7½, 8, 9, 12.
PARTS FOR 42" SUPERIOR McCULLY.

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87' Chain ELEVATOR 12x12x24" buckets.
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Jaw crushers 48 x 60—42 x 48—36 x 48—30 x 42—24 x 36 others. Roll crushers—rod mills—ball mills—hammer mills—gravel plants.

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1¾ yd. Manitowoc 3000A diesel crane.
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25 ton Shaw-Box overhead Crane, 42' span, 3/60/220.

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6 FT. X 60 FT. DRYER

1—ALLIS CHALMERS ½ INCH SHELL ROTARY DRYER, CRADLE ROLLER SUPPORTS, COUNTER FLOW, HOOD & COMB. CHAMBER.

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41' Bucket Elevator, new chain and buckets, roller bearings, $800.00
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JAW CRUSHERS—7" x 12" up to 48" x 60".
CRUSHING ROLLS—16" x 10" up to 24" x 72".
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7 x 120 - 18 x 150 Modern, 2 Bearing Kilns.
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7 x 120', 18 x 140' Kilns.
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1—4' x 12' 3 deck Pioneer Screen with mounting frame. Good cond.
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1—2' x 8' Screen single deck Link-Belt.

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Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully guaranteed. Send us your inquiries.

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Were used approximately two weeks—Manufactured by Productive Equipment Corporation, Chicago.

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Tie Plates—Spikes—Frogs & Switches, etc.

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WANTED—PLANT SUPERINTENDENT

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If interested give full details as to experience, age, and salary expected.

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Miscellaneous & spares with above
All in good working order
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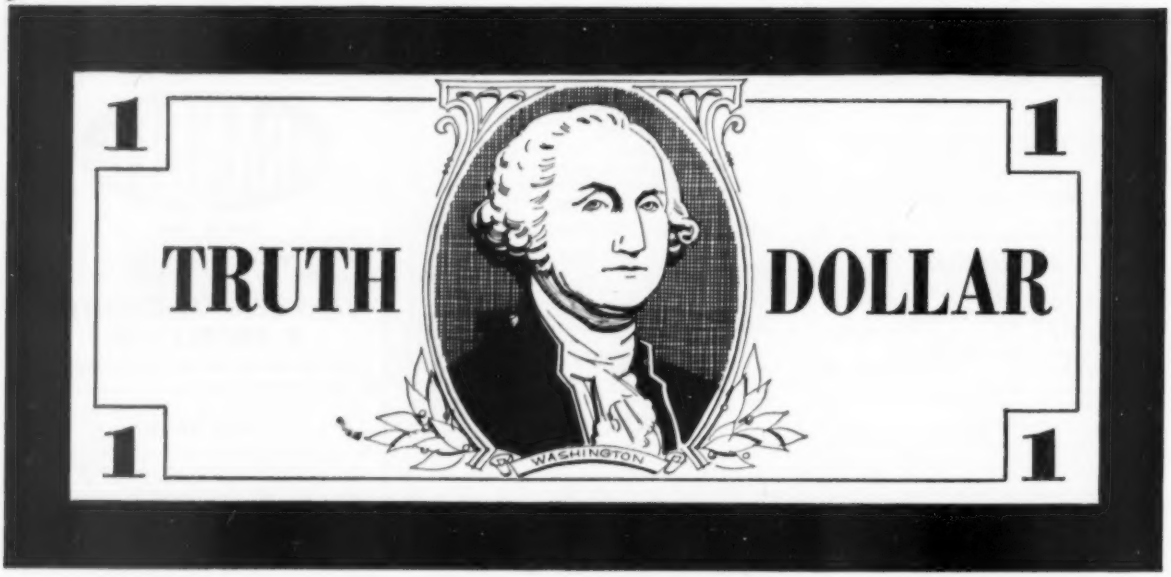

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INDEX TO ADVERTISERS

A A Wire Products Co. 177
Acme Road Machinery Co. 230
Adrian Peerless, Inc. 174
*Allis-Chalmers Mfg. Co. 24, 50, 56, 64
*Allis-Chalmers Mfg. Co., Tractor Div. 164
Alloy Rods Co. 66, 67
*American Manganese Steel Div. of American Brake Shoe Co. 38
Anaconda Wire & Cable Co. Sub of Anaconda Copper Mining Co. 8
Andrews Equipment Service 202
Athey Products Corp. 52, 53
Autocar Sales & Service Co. 203

*Babcock & Wilcox Co. 71
Baldwin-Lima-Hamilton Corp. Construction-Equipment Div. 39
*Barber-Greene Co. 30, 31
Baughman Mfg. Co. 216
Beltraction Co. 225
*Bemis Bro. Bag Co. 51
*Bergen Machine & Tool Co., Inc. 205, 219
*Besser Manufacturing Co. 170, 194, 195, 212, 216
Black Brothers Co., Inc. 224
Blue Ball Machine Works 234
Bonded Scale & Machine Co. 231
Boyer, R. H. 235
Bradley Pulverizer Company 223
Brandeis Machinery Co. 235
Brill Equipment Co. 228
Broadcast Section 227-235
Brunner & Lay, Inc. 154
Bucyrus-Erie Company 65
Builders Structural Steel Corp. 190
*Burmeister Co. 175
Burnham, Royal E. 227
*Butler Bin Co. 172

Carpenter Manufacturing Co. 219
Caterpillar Tractor Co. 102, 103
Chain Belt Company 206
Chase Foundry & Mfg. Co. 212
Chicago Electric Co. 231
Chicago Pneumatic Tool Co. 74
Chrysler Corporation (Industrial Engine Div.) 63
CIMCO 218
Cities Service Oil Co. 19
Clark Equipment Co. 44, 45
Cleveland Vibrator Co. 198
Clipper Mfg. Co. 217
Coddington Mfg. Co. 224
*Colorado Fuel & Iron Corp. Wickwire Spencer Steel Div. 35
Columbia Machine 211
*Combustion Engineering, Inc. 32
Consolidated Products Co., Inc. 232
Converto Mfg. Co. 152
Cottrell Engineering Co. 132
*Cross Engineering Co. 225

Dodge Truck Div., Chrysler Corp. 27
*Dorr Company 42
Du Pont de Nemours & Co., E. I., Inc. 68
Dunn Mfg. Co., W. E. 212
Dur-O-Wal 214

*Eagle Crusher Co. 116
*Eagle Iron Works 79
Eimco Corporation 14, 15
Electro-Alloys Div. of American Brake Shoe 23
Ellis Company 232
Equipment Corp. of America 229
*Euclid Division, General Motors Corp. 9

Falls Construction Co., D. W. 235
*Farrel-Bacon 152
Farval Corp. Inside Back Cover
Fleming Manufacturing Co. 213
Ford Motor Co. 55
Frank, M. K. 228
Frederick Iron & Steel, Inc. 225
*Fuller Co. 37, 220

Galion Allsteel Body Co. 224
Gardner-Denver Co. 60, 61
General Machinery Co. 234
General Scientific Equipment Co. 214
Goodyear Tire and Rubber Co. 3
Greenbank Sand & Gravel Co. 228
Gulf Oil Corporation 4

H & L Tooth Cmpany 2
Hannon and Sons, F. R. 109
*Hardinge Company, Inc. 160
Harnischfeger Corp. 59
Hawkins & Co. 230
Heat And Power Co., Inc. 233
Heidenreich, E. Lee 227
*Helfzel Steel Form & Iron Co. 207
*Hendrick Mfg. Co. 223
Hendrix Manufacturing Co. 22
Hoffmann Co., George W. 203

International Harvester Co. (Motor Trucks) 36
*Iowa Manufacturing Co. 6

*Jaeger Machine Co. 25
*Johnson Co., C. S. 12, 13, 214
Johnson-March Corp. 48
*Jones Concrete Machinery Co. 196

Kennedy-Van Saun Mfg. & Eng. Corp. 20, 21
Kent Machine Co. 199
Kirk & Blum Mfg. Co. 200
Klockner-Humboldt-Deutz, A. G. 58
*Koehring Company 12, 13

Le Roi Company 49
Lincoln Electric Company 150
*Link-Belt Company 1, 43
Link-Belt Speeder Corp. 126
Lith-I-Bar Co. 221
Littleford Bros., Inc. 218
Ludlow-Saylor Wire Co. Inside Front Cover

*Mack Trucks 46, 47
Macwhyte Co. 166
Marion Metal Products Co. 151
Master Builders Co. 222
Medusa Portland Cement Co. 209
Metropolitan Equipment Co. 203
Midvale Company 11
Moore Dry Kiln Co. 213

National Conveyor & Supply Co. 197
Neuhoisel Lime Works, Inc. 230
Nopco Chemical Co. 131
*Nordberg Manufacturing Co. 34
Northwest Engineering Co. 5

Ocoya Stone Company 231
O'Neill, A. J. 230
Oronite Chemical Co. 173
Oswalt Engineering Service Corp. 214
Owen Bucket Company 107

Pennsylvania Drilling Co. 227
*Pettibone Mulliken Corp. 16
*Pioneer Engineering Works 162, 163
Praschak Machine Co. 219
Pre Caster, Inc. 198

*Quaker Rubber Corp., Div. of H. K. Porter Co., Inc. 113
Quinn Wire & Iron Works 214

*Raymond Div. of Combustion Engineering, Inc. 32
Reichard-Coulston, Inc. 219
Rental Service Co. 230
Riddell Corp. 213
Roebling's Sons, John A. 33

SKF Industries, Inc. 149
Sauerman Brothers, Inc. 153
Schaffer Poidometer Co. 158
*Screen Equipment Co. 10
Servicised Products Corp. 200
Simplicity Engineering Co. 159
Sinclair Refining Co. 54
*Smidth & Co., F. L. 73
*Smith Co., T. L. 208
Smith Engineering Works 28, 29
Smith, Inc., L. B. 233
Spang & Company 112
Spray-O-Bond Co. 192
Standard Stamping & Perforating Co. 226
Stanhope, Inc., R. C. 233
*Stearns Manufacturing Co., Inc. 176
Straub Manufacturing Co. 69
Stulz Sickles Co. 158
Surety Rubber Co., The 218
Swan-Finch Oil Corp. 225
*Syntron Co. 155, 156, 160

Taylor-Wharton Iron & Steel Co. 147
Texas Company Outside Back Cover
Thew Shovel Co., The 62
Timken-Detroit Axle Division 40, 41
Timken Roller Bearing Co., Rock Bit Division 26
Tinney Drilling Co. 226
Tool Steel Gear & Pinion Co. 17
*Traylor Engrg. & Mfg. Co. 7
Truck Equipment Co. 160
Truckstell Mfg. Co. 210

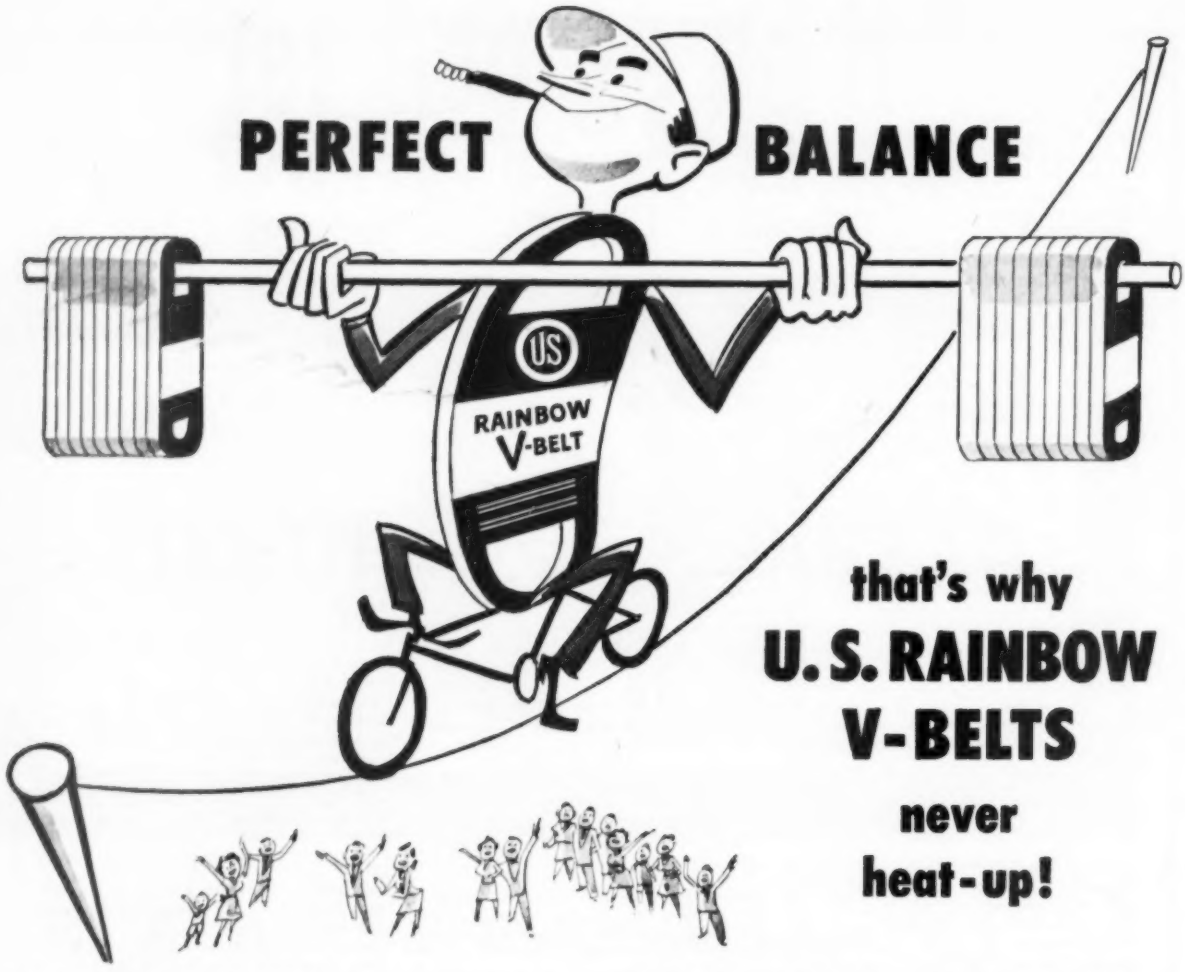
Unit Crane & Shovel Corp. 193
United Manufacturing Co. 157
United States Rubber Co. 57, 238
Universal Atlas Cement Corp. 168
*Universal Door Carrier, Inc. 216
*Universal Engineering Corp. 16
Unverzagt & Son, G. A. 230

Vinnell-United-Bell 233
Virginia-Caroline Chemical Corp. 105

Walker Machinery Co. 232
Webb Corporation 166
Wenzel Machinery Rental & Sales Co. 235
West Virginia Brick Co. 235
*Western Precipitation Corp. 165
White Motor Co. 18
*Wickwire Spencer Steel Div. of Colorado Fuel & Iron Corp. 35
Williams, Roger F. 219
Wood Dale Machine & Mfg. Co. 166
*Worthington Corp. 215

*Yuba Manufacturing Co. 161

★See also Detailed Information in 1953 Pit and Quarry HANDBOOK



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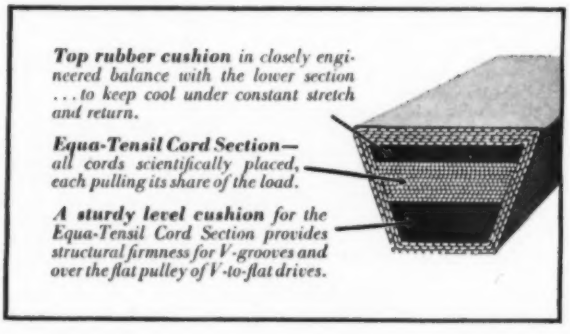
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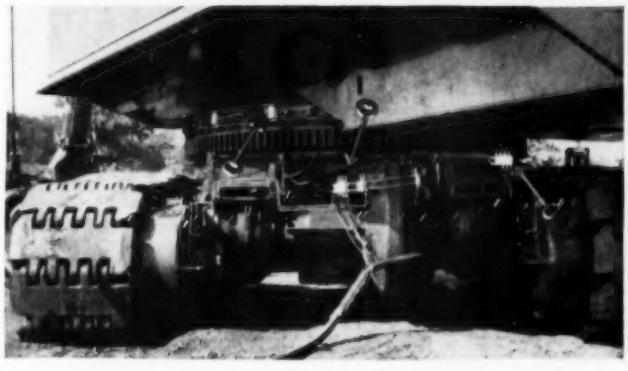

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